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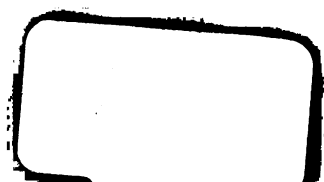
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FOURTH EDITION.

Virginia State Document
1885

HAND-BOOK

OF

VIRGINIA.

BY THE

COMMISSIONER OF AGRICULTURE.

RICHMOND, VA.:

JOHNS & GOOLSBY, BOOK AND JOB PRINTERS.

1885.

2

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to Ea
SIR
My, a

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF AGRICULTURE,
RICHMOND, 1865.

His Excellency WM. E. CAMERON,
Governor of Virginia:

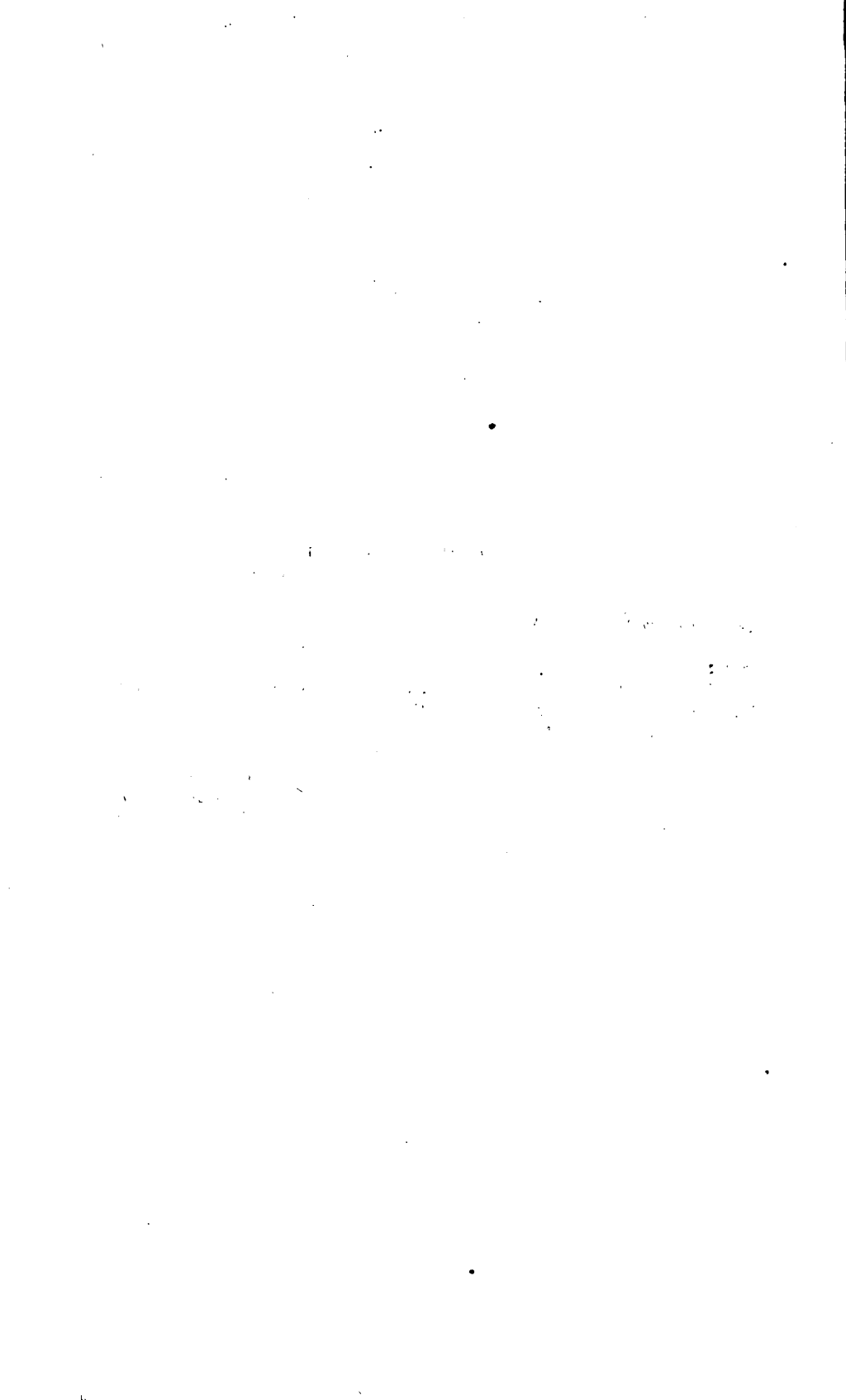
SIR:

I have the honor to present to you, and through you to the General Assembly, a Hand-Book of Virginia, fourth edition, with maps.

Very respectfully and

Obediently yours,

RANDOLPH HARRISON,
Com'r of Agriculture.



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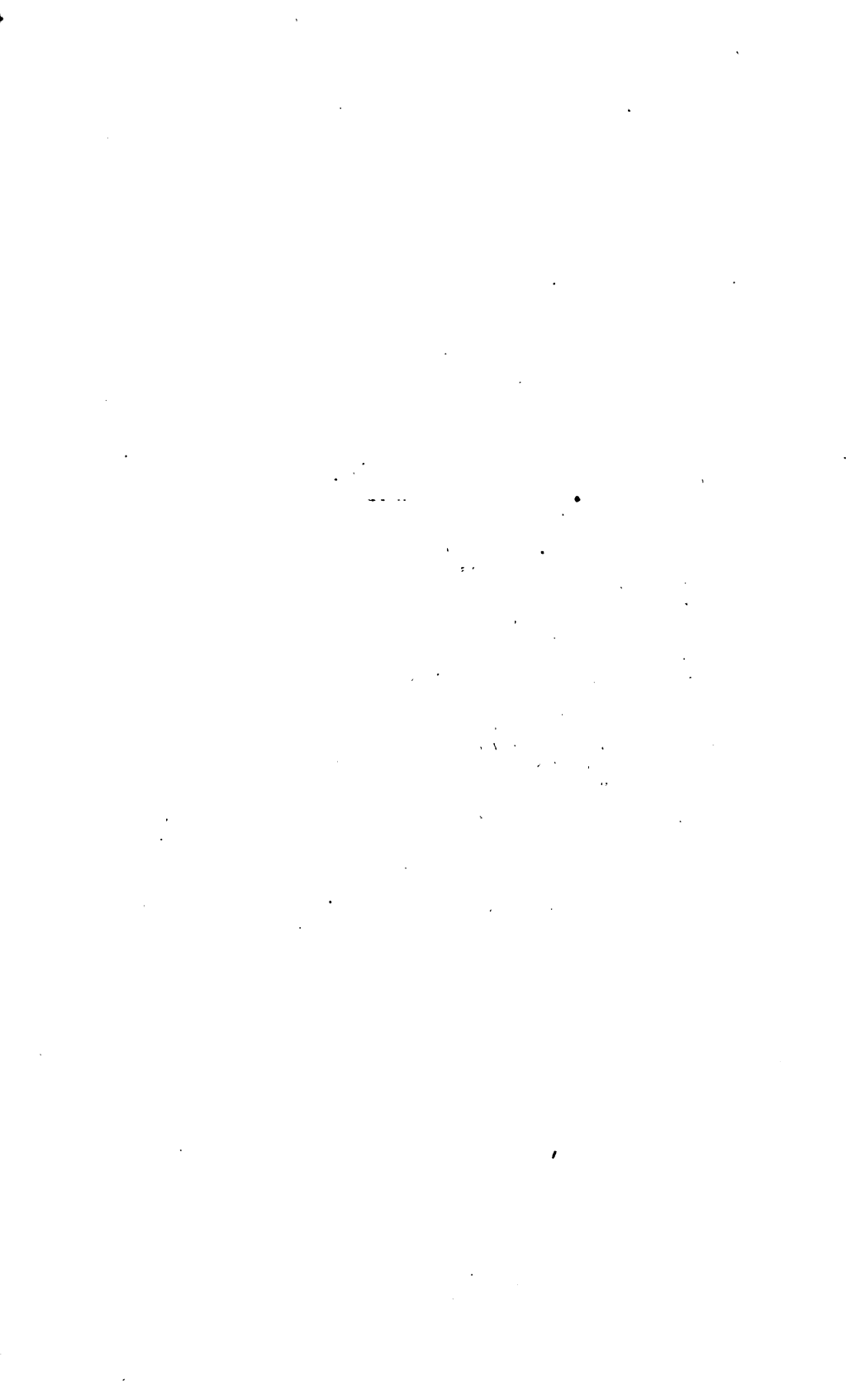
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ERRATA.

- Page 2. Line 15, for *that* read *the*,
2. Line 15, after the word *half* insert *of the Valley*.
3. Line 4, after the word *is* insert *the*.
11. Line 18, after the word *and* insert *other*.
17. Line 9 from bottom, for "24.89" read "34.39."
25. Line 16 from bottom, for *has* read *have*.
30. Line 30, after the word *and* insert *Ohio*.
34. Line 34, Line 18, for *county* read *country*.
34. Last line, for *length* read *breadth*.
41. Line 15 from bottom, after the word *Richmond* insert *and*.
41. Line 5 from bottom, after the word *eight* insert *gold*.
42. Line 1, for *Everman* read *Overman*.
47. Line 1, for *part* read *parts*.
78. Line 23, for *6 feet* read *east foot*.
99. Line 13, for *any* read *many*.
89. Line 36, for *wired* read *wider*.
93. Line 36, for *Weir's* read *Weyer's*.
94. Line 25, for *Weir's* read *Weyer's*.

PREFACE.

The act of March 29th, 1877, establishing the Department of Agriculture, in prescribing the duties of the Commissioner, requires him, first of all, to "prepare, under his own direction, a hand-book describing the geological formations of the various counties of this State, with information as to the general adaptation of the soil of the said counties for the various products," &c.

The first Commissioner, Dr. Pollard, in accordance with this requirement, published such a hand-book, and distributed three small editions, the last in 1881. These have long since been exhausted, and none have been issued since the edition of 1881. Since the present Commissioner came into office there have been many applications from citizens of other States, principally from the North and West, for documents of this sort—for information as to the soil, resources, and climate of the State, and such other particulars as would guide them in seeking a new home. Fortunately I had placed at my disposal a large number of copies of Hotchkiss' Summary—which is, what it purports to be, a full "Description of the State, its Geology, Soils, Minerals, and Climate—Animal and Vegetable Productions, Manufacturing and Commercial Facilities," &c. These, and copies of Commodore Maury's "Physical Survey of Virginia," I have sent abroad where I thought they would do most good, thus supplying, to a certain extent, the need of a hand-book.

But, apart from the fact that a liberal construction of the requirement "to prepare a hand-book" shows the obligation upon the Commissioner to continue to issue such publications from time to time, I think the "hand-book" fills a place—supplies a need—which even such a magazine of information as the "Summary" of Hotchkiss cannot fully supply. The spirit of the age more and more calls for condensation and particularity—working men want information culled out and put in concise shape—digested for them, as it were. A hand-book should be what its name imports—a publication brief and to the point—portable—easy of reference—a book for the hand—a truthful finger-post to direct the immigrant where to find the best location.

The present publication falls far short of the standard I have set up, and but that from various causes I have been delayed in getting it out far beyond the time expected, I would rewrite the greater part and try to make it conform more nearly to my ideal.

In the effort to be concise, doubtless many things have been left out which should be recorded; and, after all, there will be found matter which a more judicious editor would have excluded.

To secure full and accurate information, embracing all the improvements—the betterments—that have been introduced in the different sections of the State, at

least one correspondent in each county was written to, with a request to give a concise description of said county—soil, climate, products to which it seemed best suited—its resources of all kinds, as minerals, timber, water-power, &c.—its advantages and attractions, including accessibility to market—all these items of information for the guidance of intending settlers I hoped to get from the fountain heads in every quarter of the State.

But the responses have been few—instead of the valuable descriptive paper asked for from each county, I have received at the rate of one from each ten. To those correspondents who complied with my request, I beg leave to return grateful acknowledgments, and to the many who did not, as well as to the public, I would express my regrets that so meagre description of not a few counties had to be given—that they are not credited with various improvements, which have been made in the last year or two, and which are brightening their prospects and making them more attractive.

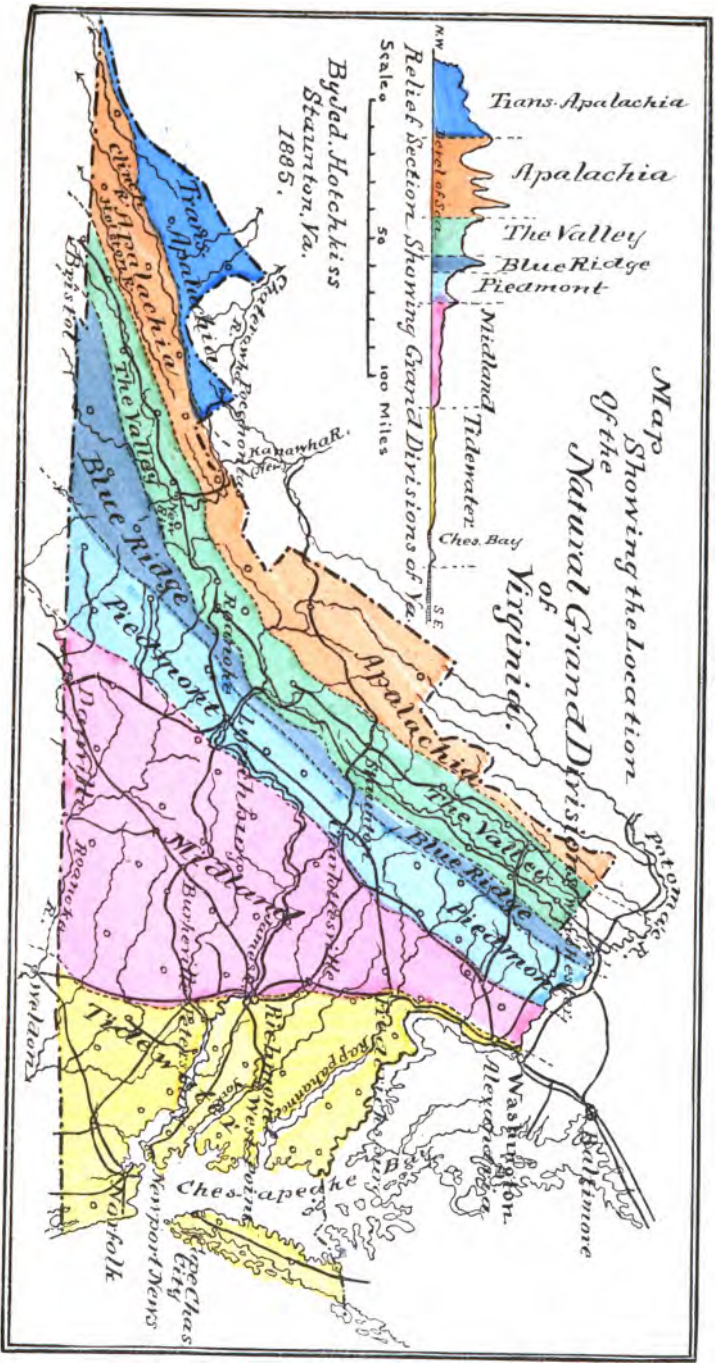
The papers descriptive of the Piedmont division, and that Northern half from Potetourt to Jefferson and Berkeley, were contributed by Captain Richard Irby, general agent of the "Bureau of Immigration," and the papers upon the Southern half of the Valley, "Blue Ridge," and "Appalachia," are the work of Capt. C. R. Boyd, of Wytheville. To those who know these gentlemen it is unnecessary that I should speak of their marked fitness for giving a graphic description of the resources of these sections of the State, with which they were, perhaps, more familiar than I was with the Eastern division.

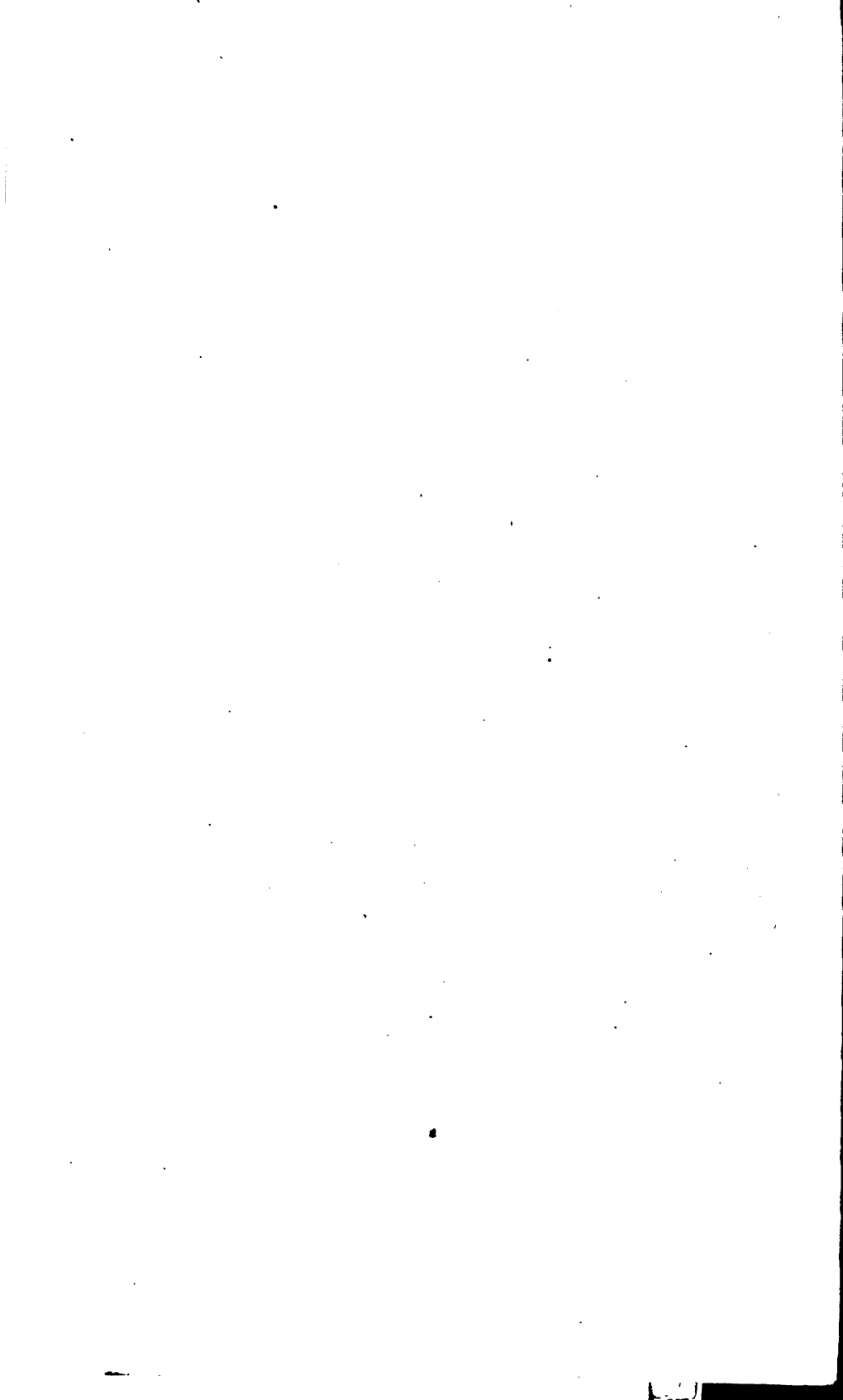
RANDOLPH HARRISON, *Commissioner.*

Map
Showing the Location
of the
Natural Grand Divisions
of
Virginia.

Relief Section Showing Grand Divisions of Va.
Scale 0 50 100 Miles

By J. D. Hotchkiss
Staunton, Va.
1885.





SYNOPSIS,
OR
BRIEF GENERAL REVIEW
OF
VIRGINIA.

Virginia—what is left since the excision of West Virginia—lies between the parallels of $38^{\circ} 21'$ and $39^{\circ} 27' N.$, and contains an area variously estimated at from 38,000 to 45,000 square miles. The designation, "Keystone State," would be more appropriate to Virginia than to Pennsylvania, seeing that it is one of the original thirteen States which occupies just that position—"keystone" of the arch in the grand sweep or curve of the coast from the Bay of Fundy to Florida. According to the classification of Maury and Guyot, it is the southernmost of the "Middle Atlantic" States. Hotchkiss, in his "Summary," says: "Virginia, as a whole, lies in the region of 'middle latitudes,' giving it a climate of 'means,' between the extremes of heat and cold incident to States south and north of it." Dr. M. G. Ellzey, of Washington, D. C., well says: "The geographical position and physical features of Virginia are eminently favorable to a salubrious air and delightful climate equally removed from extremes of heat and cold."

The often-quoted expression of Captain John Smith, "Heaven and earth never agreed better to frame a place for man's habitation," shows the estimation in which Virginia was held by the early settlers.

In 1858, the Hon. Caleb Cushing, of Massachusetts, in an address delivered in Richmond, declared his belief that "without disparagement of other parts of the Union, the belt of country subtended by the Chesapeake Bay, and extending indefinitely westward, possessed the climate and other conditions most favorable to the highest development of man and the horse, the noblest of the animal creation." While this may well be considered somewhat in the light of a complimentary exaggeration, for we hold that this imaginary belt should be considerably broadened, north and south, yet it is probable that the central zone of the most favored climate lies within the limits marked out. Indeed, the truth of the utter-

ance with regard to the horse—defining the region where he reaches the highest degree of perfection—seems now to be established beyond cavil by the conceded preeminence of Kentucky which has taken the place once held by Virginia as the “race-horse region,” and moreover is surpassing all other States in breeding horses for trotting and for all general purposes.

It is affirmed also that *men* there attain greater stature than anywhere else on the continent.

Even if this claim be regarded as untenable, it cannot be denied that the region in question is highly favored by nature.

Going from the lowlands of Virginia westward we pass from the warm alluvial districts of “Tidewater,” which are tempered by the influence of the gulf-stream, through the more elevated region of “Middle” Virginia and Piedmont, across the Blue Ridge into the great limestone formation of the “Valley”—thence into “Trans-Alleghany,” or “Appalachia,” which is also a limestone region, in part, the difference of elevation, geological formation, distance from the sea, &c., giving an almost unlimited choice of industrial pursuits.

For more convenient reference and examination by any who are thinking of settling or prospecting in Virginia, a short description of the State is here given by grand divisions, each with the counties composing it. These are taken in the order indicated above, from east to west, viz :

	Area—Square Miles.
Tidewater Virginia.....	11,350
Middle Virginia.....	12,470
Piedmont Virginia.....	6,680
The Valley.....	7,550
The Blue Ridge.....	1,230
Appalachia.....	5,720
	<hr/> 45,000

See Map.

THE TIDEWATER DIVISION.

The first of these, “Tidewater,” is an alluvial region rising from the sands that skirt the ocean, the “post-tertiary” formation, to the low plains nearest the Chesapeake Bay, the “pliocene”—then to the “middle tertiary,” the “miocene”—the strip of country extending, as ascertained by Rogers and Ruffin, to a line passing through Matthias Point on the Potomac and Coggin’s, on James river, near City Point—there we strike the “eocene,” or “lower tertiary,” a formation underlying the others, and coming next in age and elevation to the archæan formation of the “middle division,” which it joins in its western boundary at the head of tide.

SOILS AND CROPS.

The soils of this division are, in general, light, warm, easily tilled—and favored, to this end, with a semi-tropical climate, are, “par excellence,” garden soils—admirably adapted to raising early vegetables for the great markets of the Northern cities. This is especially the character of the Eastern Shore, the Norfolk, and parts of the Hampton and Gloucester Peninsulas. In a more restricted sense this description of the soil is applicable to the greater part of Tidewater. The land is “kind,” and easily worked—an important factor in estimating the value

of land, as every practical farmer knows. The late Gov. H. A. Wise used to say of the lands of the Eastern Shore that they were more profitable than other soils which would make twice as much per acre, because, in the first, "a man and a mule could, thanks to the easy tillage and greater surface he could work, make more crop on the light land than on the strong—and in this country, where land is abundant and cheap, *labor* is the element most to be considered."

The products of this division are very varied, and can be further diversified to an almost unlimited extent.

Cotton is grown with great profit in several counties. *Peanuts*, the finest produced anywhere. Corn and oats everywhere. Wheat of the very best quality, and grass, except where the lands are too light for these crops, as is the case with some of the most valuable.

Tobacco is cultivated to a very small extent in some of the Tidewater counties. In colonial times it was the staple—not only the money crop, but the currency of the colony; and the reputation of Virginia tobacco was built upon the product of the Tidewater section. The tobacco grown at "Varina," on James river, had an especial reputation, and the name of the place is said to have been given it because the quality of the tobacco there grown resembled that of "Varinas," in Cuba.

There is no doubt that excellent tobacco can be—*has been*—grown in every county in this section; and probably in every one in the State. The prevailing practice, however, seems to indicate that in many localities other crops have been found more profitable—hence the culture of tobacco has been abandoned in county after county, so that there are many persons who have never seen the plant growing.

But now that fashions are changing—new kinds of tobacco in demand, as, for instance, "Sumatra," which is being largely imported for cigar-wrappers, some fine, high-priced variety may be found which will suit this country and be profitable here; and Lower Virginia may regain her reputation for "sweet-scented," or highly-flavored tobacco.

SHEEP AND HORSES.

This country is well-adapted to sheep. The earliest lambs, and some of the finest in the State, are raised here, and have been shipped to New York with great profit.

Fifty years ago the finest blooded horses of America were bred here in the western counties of "Tidewater," and the adjoining counties of the "Middle Division." This was called the "race-horse region," and it was long supposed that nowhere else could this class of horse be raised in equal perfection.

GRASS.

This claim, and the one just preceding, that Eastern Virginia is a good sheep-raising region, may seem strange in view of the fact that it is commonly considered the very reverse of a "grass country;" but the native grasses, as wire-grass, crab-grass, and occasionally blue-grass (*poa compressa*), are very nutritious.

Moreover, one of the results of the late war was to show that timothy, orchard and other grasses, previously supposed to be ill-suited to the country, would grow luxuriantly under proper conditions. Even old residents were surprised to find timothy, &c., growing in perfection where horses had been picketed and fed upon

Northern hay; and there is no longer any doubt that hay, the very finest, can be grown here. Some of the best that comes to the Richmond market is made upon the James river between Richmond and Norfolk.

FRUITS.

This is a fine fruit country. Apples, pears, grapes, and small fruits, grow in great perfection. The peach is not a sure crop in the greater part of this country.

TIMBER.

This region is well-wooded, as indeed is all of Virginia, the growth varying greatly with the geological and climatic differences referred to above. In the Tidewater division we find abundance of the finest pine, cypress, juniper, white and other oaks, ash, maple, gum, locust, cedar, holly, dogwood, hickory—some walnut, sycamore, persimmon—and many other trees of minor importance. In some of the lower counties are large quantities of fine chestnut timber. All along the banks of some of the rivers we find the white mulberry—the “*morus alba*”—growing in great profusion, offering an inviting field for silk-raising. This tree was introduced from Europe by Gov. Digges, one of the colonial governors, and has made itself at home along James river and its lower tributaries, flourishing and propagating itself as if indigenous.

NAVIGABLE WATERS.

Various writers have commented on the number of the navigable streams which indent this portion of the State. One of the oldest of them, in closing a description, says: “So that no country in the world can be more curiously watered; but this conveniency, that in future times may make her like the Netherlands, the richest place in all America, at the present I look on as the greatest impediment to the advance of the country, as it is the greatest obstacle to trade and commerce. For the great number of rivers and the thinness of the inhabitants distract and disperse a trade. So that all ships in general gather each their loading up and down an hundred miles distant. This (*i. e.*, the number of rivers), is one of the chief reasons why they have no towns, &c.”

The same remark has been made by Mr. Jefferson and others, and explains why Virginia cities have been of such slow growth until recently—since water transportation is no longer paramount.

Admitting the disadvantage in this respect, there are many counterbalancing advantages. This is a country of abundance—the rivers yield the finest fish, oysters, wild fowl; and as remarked by Dr. Pollard, “The numerous creeks indenting this country furnish the cheapest and readiest means for a commerce which comes home to the abodes of the rural inhabitants, while the ravines and river-cliffs, washed by the tides, disclose the rich marls which are destined to bestow the highest rewards upon its enterprise by spreading fertility and wealth upon the farmers who use them.”

MARL.

To speak of the geology of this country is to give a description of the wealth of marl underlying it—the whole region from the ocean to the head of tide probably resting upon beds of marl at greater or less depth. There are, as far as is known, no minerals here possessing value other than in an agricultural point of view,

except the ochre beds of Chesterfield county, near Bermuda Hundreds. The small deposits of iron ore occasionally found in the marl-beds, or bog ore near the streams, do not constitute an exception worth speaking of. But the agricultural value of the marls of Virginia cannot well be overestimated—exhaustless stores of fertilizing material laid up for the future—they will some day make the alluvial region of Virginia the Belgium of America. A full description of the geological formation of this alluvial region would not be interesting to the unscientific reader, but it may be well to call attention to the difference between the marls of the more recent formations, the *pliocene* and *miocene*, which derive their value mainly from the carbonate of lime which they contain, and the green sands and olive earths which are found in the *eocene* in conjunction with the shell or calcareous marl. (Green sand is *sometimes* found mixed with the marl of the *miocene* region.)

The region of *eocene* marls extends from the falls of the river eastward fifteen to twenty miles. Miocene marl is often found overlying the eocene, and is easily recognized by the difference in the shells which it contains—scallop and others not found in the eocene. Beneath this (Professor Rogers, quoted by Dr. Pollard, says) and usually separated from it by a thin line of “black pebbles,”* like those occurring on the Pamunkey, there occurs a stratum of greenish red and yellow aspect, containing much green sand and gypsum, the latter partly disseminated in small grains, and partly grouped in large crystals. The under stratum, rich in green sand and containing a few shells in friable condition, extends to some depth below the level of the river. At “Evergreen” the whole thickness of the deposit appears to be about twenty feet.

This was said of the James river formation, but will apply as a general description to the deposits of the Pamunkey, Mattaponi, Rappahannock, and Potomac, as Professor Rogers says “eocene marl is there found very similar to that in the James. On the Mattaponi the occurrence of green sand strata has been ascertained in some places while in others the beds containing the substance have been replaced by beds of clay which are less likely to prove valuable agriculturally. The olive earth overlying some of these beds, particularly on the Pamunkey, seems to have lost some of the carbonate of lime which it once contained, and has but a small portion of gypsum.” See report of Dr. Ledoux, p 10.

Much has been said of the wonderful change wrought in the lands of New Jersey by the use of the green-sand marl found in the eocene formation in that State, and I cannot do better than quote Dr. Pollard’s remarks and citations at second hand from Prof. H. D. Rogers’ report in the Geology of New Jersey, differing with him as to the “valuable constituents” of the green sand, to which its marvellous effects are due.

“Of the agricultural value of eocene marl there can be no doubt. It has been used with great success in New Jersey, and very profitably on the James and Pamunkey in Virginia. For some time beds containing a portion of carbonate of lime (shells) and gypsum were sought after, particularly on the Pamunkey, to the neglect of the underlying green sand. Afterwards the green sand was learned to be appreciated. On “Turkey Island Creek,” in Henrico, deposits were found almost void of shells, which have been used to great advantage, particularly in promoting the growth of clover, and secondarily of the cereals. The effect of green sand is very permanent as well as very efficacious from the beginning. In New Jersey it has been used in almost unmixed condition for many years, and is highly prized as a fertilizer. There, it is said, as small an application as ten or fifteen

*NOTE.—These “black pebbles” are no doubt “coprolites” rich in phosphoric acid. See report of Dr. Ledoux on p. 10.

bushels to an acre is uniformly attended with most excellent effects, whether the soil be clay or a light sterile sand. Prof. Rogers quotes the following from his brother, Henry D. Rogers' report on the Geology of New Jersey: "When we behold a luxuriant harvest gathered from fields where the soil was nothing originally but sand, and find it all due to the use of a mineral sparsely disseminated in the sandy beach, we must look with exulting admiration upon the benefits to vegetation conferred by a few scattered granules of this unique and peculiar substance. The small amount of green sand dispersed through the common sand is able, as we behold, to effect immeasurable benefits in spite of the great preponderance of other material, which we are taught to regard as, by itself, prejudicial generally to fertility. This ought to exhibit an encouraging picture to those districts not directly within the limits of the marl tract, where some of the strata contain the green substance in sensible proportion. It expands most materially the limits of the territory where marling may be introduced, and points to many beds as fertilizing which would otherwise be deemed wholly inefficacious."

The dark, greenish clays and sands in this region have sometimes been mistaken for green sand. These clays are destitute of fossils, and have an astringent or copperas flavor, and generally a strong sulphurous odor, though a slight sulphur odor is sometimes discovered in the best marls. Small shells, well-decomposed, are often found sparsely distributed through these eocene marls, though an almost total absence of shells is sometimes observed in some of the best of them, as, for instance, those of Turkey Island Creek, in Henrico. Fine, sparkling scales of mica have been mistaken in these deposits for gypsum. The kinds of shell often found in the miocene and eocene marls serve to distinguish them when there is any doubt about the classification of the variety of marl. The saddle-shaped oyster is found in the eocene or green sand marls, and not in the miocene or shell marls; and the common scallop or clam is found in the latter, and not in the former.

The eocene marls have been extensively used in the past, and some are using them now, but to a limited extent generally; and the same remarks are applicable to the miocene. It is to be hoped that their use will be resumed generally, as where the deposits are accessible and of good quality there can be no doubt of the value of their application; and this particularly refers to the green sand variety. Where these latter deposits exist on the rivers, it would no doubt be profitable to transport to farms up and down the rivers, and probably over railroads for short distances, where the roads touch the rivers. Formerly these marls were boated up and down the rivers in lighters, particularly on James river. As the condition of affairs improves, and farmers acquire more means, they will no doubt find it much to their advantage to use these marls to increase the fertility of their lands."

Where these marls co-exist some of the effects are, of course, due to the lime, and some to potash in the green sand, but where the latter exists in good proportion the influence is no doubt due more to the green sand than the lime. Sulphate lime (gypsum) existing in many of the eocene marl deposits, no doubt on some soils exerts a beneficial effect.

NOTE.—It was long supposed that to the potash contained in green-sand marls was due their great value in restoring wornout lands, and it is not surprising that Dr. Pollard, the first Commissioner of Agriculture in this State, active in acquiring knowledge as he was zealous in disseminating it, should have been of that opin-

ion. But that the principal value of green sand is attributable to its *phosphoric acid* seems to be clearly proven by Prof. Geo. H. Cook, LL. D., State Geologist New Jersey. I give his conclusions as of the very highest authority.

GREEN SAND MARLS.

"Green sand marls have been of inestimable value and influence in improving New Jersey agriculture. They have been the means of restoring large districts of wornout land to fertility; they have improved the texture and productiveness of lands naturally too light to be otherwise worth cultivation. They continue to be used in large quantities, and constitute a valuable low priced fertilizer—very desirable where the cost of transportation is not too great.

Phosphoric acid is in all the green sand marls, and is in combination with lime or iron, forming phosphate of lime or phosphate of iron. It is not a part of the marl grains, but is mixed through the mass of them, in fine powder or in small, light green and very soft grains. It is insoluble in water, but in good form to dissolve in the soil. It is in very variable quantities in the marls from different beds, and in marls from different depths in the same bed there are considerable differences in the percentages of this substance. Some of the best marls which are sold contain 3 to 4 per cent. of phosphoric acid, while there are others sold which do not contain more than a half of 1 per cent. of this acid. Potash is a constituent of the grains of green sand marl, and makes from 5 to 7 per cent. of its weight. It is combination with silica and silicates of iron, alumina and magnesia. It is quite insoluble in water, and though it may be soluble in some other substances, it is not more likely to be dissolved than the other mineral substances in the soil, for example, than feldspar or glass. We have no evidence that it is of any effect in growing crops, and we cannot assign any price to it. It should be of value in composts, and there is some reason to believe, that the action of quicklime or of fermenting manures will liberate and make soluble some of the potash. Carbonate of lime, in fine powder, is found in some of the green-sand marls, but not in all of them. Samples have been analyzed which contain 20 per cent. of its substance, while many others are found which do not contain any. Small quantities of sulphate of lime and sulphate of iron may also be found in some of the marl.

The experience of the farmers who use marl, and the chemical tests which have been applied to the marl which they approve, and also to those which they do not value, have led to the following conclusions:

1. That marls containing the most phosphoric acid are the ones which are most highly esteemed by farmers.
2. That marls containing carbonate of lime in fine powder, besides any shells that may be in them, are the best and most lasting fertilizers, though they must be used in large quantities.
3. That marls consisting of pure grains of green sand, though containing their full percentage of potash, are frequently without any fertilizing action, and their effects are not very well marked in any cases.

Accepting these conclusions as being up to the present state of our knowledge, we have not thought it of use to analyze the samples sent in this year for anything quantitatively but phosphoric acid and carbonate of lime, and qualitatively for sulphate of iron."

Station No.	FROM WHOM SAMPLES WERE RECEIVED.	Total Phosphoric Acid.	Sand and Insoluble Matter.
260	Edward Conover, Mapleton, N. J., (light green).....	1.01	50.19
261	Edward Conover, Mapleton, N. J., (dark green).....	1.38	50.61
265	Charles F. Tice, Williamstown, Marshall's Pits, (blue).....	1.54	.....
266	Charles F. Tice, Williamstown, Marshall Pits.....	0.70	.....
275	West Jersey Marl Co., McFarland Farm, (green).....	1.09	.....
276	West Jersey Marl Co., Ware's Pits (green).....	1.12	.....

The above was quoted in full because it will apply equally well, I think, to the green sands of Virginia as to those of New Jersey.

I have before me a copy of an exhaustive report made by Dr. Ledoux, a distinguished chemist of New York, upon certain marl-beds on the Pamunkey, which he carefully examined and from which he took samples in various places for the determination of the percentage of phosphoric acid and potash.

	Phosphoric Acid.	Potash.
In one sample of green sand he found.	9.99 per cent.	2.72 per cent.
In another.	1.37 "	1.32 "
In "olive earth".	6.49 "	0.53 "
Another sample.	7.76 "	0.53 "

"Between the olive earth and the green sand is a singular deposit, varying from one to six inches in *width* (qu. depth? C. A.), and appearing everywhere at the juncture between the two formations. It consists principally of well-preserved bones, shark's teeth, and other fossils, with a multitude of small nodules varying in size from that of a pea up to a circumference of three inches. These nodules are very rich in phosphoric acid, and in my opinion nothing more or less than coprolites."

The great diversity in the composition of the two samples of green sand analyzed is very striking, one containing nearly 10 per cent. of phosphoric acid, and the other only 1.37 per cent. Even this is a larger percentage than was given by Dr. Gascoyne in the laboratory of this Department. Samples of the different deposits were brought from the same locality and carefully tested here, and the green sand (the best) showed only.			
	1.01 per cent. phos. acid.		
The olive earth.	2.64	"	"
Coprolites.	23.47	"	"
Bones from rich streak.	34.29	"	"

The samples analyzed here may have been taken from the outer edge of the deposit, where it had been exposed and weathered so as to lose some of the phosphoric acid. Even the smaller percentage shown, however, is enough to account for the great and lasting effects which have resulted from the use of this fertilizer. It will be observed that the average of the six samples analyzed by Prof. Cook is phosphoric acid, 1.14 per cent., so that if the samples gotten by Prof. Ledoux were not far better than the average, Virginia green sand is much richer in phosphoric acid than the New Jersey.

The "coprolites" are evidently the "black pebbles" of Prof. Rogers, above-referred to. If these and the other fossil remains in the "rich streak" could be found in large quantities and in an accessible place they would prove a mine of wealth to the owner of the deposit. Thorough investigation is needed.

HEALTH.

An idea has somehow gained currency that the Tidewater region of Virginia is an exceedingly unhealthy country. It is conceded to be very desirable in other respects, but the fear of "malaria" keeps away many who otherwise would gladly settle there.

That ague and fever prevails in some sections, it is idle to deny. Other localities in the Tidewater region are free from malarial diseases, and there is a remarkable immunity from fevers of a typhoid character. I agree with the late Dr. Pollard in thinking that "if the facts could be known, no more mortality and as much longevity would be found in Tidewater as in the mountainous regions of Virginia."

RAILROADS.

This country, already blessed with exceptional facilities of transportation by water, as has been shown, is now penetrated in various directions by railroads, securing quick carriage of vegetables, fruits, and perishable commodities to the great markets of the Northern cities. The New York, Philadelphia, and Norfolk road now runs through almost the entire length of the Eastern Shore Peninsula, bringing not only that shore but the counties tributary to Norfolk and Newport News in close communication with Philadelphia and New York.

On the Southside the Norfolk and Carolina, connecting Norfolk with Edenton, the Norfolk and Western with its branch from Petersburg to City Point, the Seaboard and Roanoke, the Atlantic and Danville, which last has recently been extended from deep water, at Claremont, on James river, in Surry county, in a southwest course through the Tidewater counties of Surry and Sussex, into Middle Virginia, these, with several shorter roads—the Suffolk and North Carolina, the roads from Norfolk to "Virginia Beach," and "Ocean View," intersect the Tidewater division south of James river. On the north we have the Chesapeake and Ohio penetrating the Peninsula from Richmond to Hampton Roads, and the York River road from Richmond to West Point at the head of York river, and a road (the Richmond and Chesapeake) has been surveyed from the capitol to the Chesapeake Bay near the mouth of the Potomac. The settler in search of a home easy of access can surely find it here, and with it cheap lands, easily cultivated—cheap living, an orderly, industrious, and in many sections an exceedingly thrifty population, ready to welcome the honest immigrant who will make his home among them.

This last assertion is equally true of all other parts of the State.

TIDE-WATER VIRGINIA BY COUNTIES.

GROUPING IN NATURAL SUB-DIVISIONS.	COUNTIES.
The first peninsula, or "The Northern Neck"	{ King George. Westmoreland. Richmond. Northumberland. Lancaster.
The second, or Middlesex Peninsula.....	{ Essex. Middlesex.
The third, or Gloucester Peninsula.	{ King & Queen. Mathews. Gloucester.
The fourth—the King William or Pamunkey Peninsula.....	{ Caroline. King William.
The fifth, or "The Peninsula"	{ Hanover. New Kent. James City. York. Warwick. Elizabeth City.
The sixth—Richmond or Chickahominy Peninsula.....	{ Henrico. Charles City.
The seventh, or Southside Peninsula.....	{ Prince George. Surry. Sussex. Southampton. Isle of Wight. Nansemond.
The eighth, or Norfolk Peninsula.....	{ Norfolk. Princess Anne.
The ninth peninsula—"The Eastern Shore"	{ Accomac. Northampton.

In the following brief description of each county they are taken in alphabetical order, except the first two, which are so much alike in soil, climate and population that Northampton follows Accomac, much of what is said of one being equally applicable to the other.

THE EASTERN SHORE PENINSULA.

ACCOMAC

is the northernmost of the two counties belonging to Virginia on the "Eastern Shore" Peninsula. It contains 243,651 acres of land, and a population of 24,408—is about 40 miles long, with an average width of ten miles, the Atlantic Ocean bounding it on the east and the Chesapeake Bay on the west. There are numerous arms and inlets from both, extending into the main, and a chain of islands on the ocean side acting as breakwaters to the higher lands. The salt air from the surrounding sea, and the high temperature of the gulf-stream, make the climate milder and less liable to frost than other localities much further south. Until recently, communication with market was by steamboat and sailing vessels only (a fine line of steamers plies regularly between this county and Baltimore)—in this way the staple crops, the sweet and Irish potatoes, the onions, peas, cabbages and other vegetables, and the small fruits, were sent to the markets of Baltimore, Philadelphia, and New York, bringing an annual return to the producers of a million and a half of dollars.

In addition to these facilities, the building of the New York, Philadelphia and Norfolk railway within the last year, from Delmar on the dividing line between the States of Delaware and Maryland, to "Cape Charles City," near the mouth of Chesapeake Bay, and thence making the city of Norfolk by a line of fast and elegant steamers, completes the chain of the great short line, North and South, and lessens the time of transit some ten hours between New York and points South, and puts the truckers and fruit-growers of this Peninsula in close communication with New York and Philadelphia. The road is admirably located along the central line of this county and Northampton, almost an air-line, with a maximum grade of less than ten feet—first-class steel rails, and an equipment unsurpassed.

The soil of this section is a light sandy loam, warm and easily tilled; the sub-soil is red clay. Corn and oats were long the staple crops of the Eastern Shore; but with the unsurpassed facilities for marketing small fruits and vegetables, the latter industry has come to be the principal one. This region will soon become one of the principal market gardens for the great cities of the North. The climate is pleasant and salubrious, the salt air being wafted over the Peninsula from almost every point of the compass.

The brief description here given of Accomac is applicable in every particular, except that the soil of the latter is in general rather more sandy, to the sister county of

NORTHAMPTON,

which occupies the southern end of the Peninsula. It is thirty miles long, with an average width of only about five miles, and contains 100,100 acres of land, with a population of 9,150. All the advantages possessed by Accomac, of easy and quick access to market, warm and cheaply tilled soil, and salubrious climate, are enjoyed by the citizens of Northampton.

Fish, oysters and wild fowl form a source of cheap and luxurious living, and large revenues to the inhabitants of these counties. There is no part of the country cheaper to live in than this. About one-fifth of the population of the Peninsula is engaged in planting oysters and fishing, from which a good living is always made.

Churches are numerous and public schools are convenient.

The taxes are moderate, being about 90 cents in the hundred dollars' worth of property.

Political freedom here (and everywhere else in Virginia) is a fixed fact. One of the strong Democratic towns elected a Republican (a leader of his party) for its mayor because he was a good and efficient man.

The county roads are well-located, and naturally good. There is nothing lacking here (I quote a most intelligent correspondent), "but people—new people—new ideas. We are as intelligent and industrious as most people, but we need new life to pull us out of the grooves and ruts and turn us into different and more progressive channels."

The same writer says: "These people show, 'strongly marked,' the individuality of the English settlers, of whom they are the eldest in the United States," retaining in a marked degree the quaint manners and expressions of the mother country a century and more ago."

"Lands are for sale at from ten to fifteen dollars per acre," and there is no need of a prophet to inform us that they will rapidly enhance in value.

NORTHAMPTON COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Coarse sand*, from Ocahonock creek, collected by Rich'd Lamb.—C. & S. E.
2. *Brick Clay*, from same locality.

CAROLINE,

though classed as one of the Tidewater counties, is in part upon the primary or archæan formation. It was formed in 1727 from Essex, King & Queen, and King William; is about 28 miles long and 20 wide; contains 330,218 acres of land, assessed at \$1,879,274; population, 17,231.

It is drained by the Rappahannock, the Mattaponi, the Pamunkey, and their tributaries, which are numerous, and is one of the best watered counties in the State. The various rivers and creeks give much bottom land which is very productive, and fine water-power and mill sites. Corn, wheat, and tobacco are largely grown. The tobacco of this county is of first-rate quality, there being a belt of the "upper jurassic" formation all along the line between the tertiary and the primary formations; and the lands of this quality are admirably suited to the finer qualities of tobacco, as has been remarked in the general description.

Clover and orchard grass grow well here—perhaps the finest orchard grass seed brought to the Richmond market is produced in Caroline. Phosphates are said

to act remarkably well on these lands. Sheep are profitable, especially raising early lambs for the Northern markets.

The Richmond and Fredericksburg railroad passing through the centre of this county, the Chesapeake and Ohio near its southern edge, and the Rappahannock river on its northern boundary, give convenient access to market.

Large numbers of Northern families have settled in this county, and are said to be well pleased with their new homes amongst a thrifty, intelligent and moral people.

CHARLES CITY

was one of the original shires of Virginia, and was established in 1634. It is 30 miles long, with a mean width of about eight miles, and contains 113,249 acres, assessed at \$600,994. Population, 5,516.

This county occupies the Peninsula formed by the Chickahominy and James rivers. The surface is mostly level or gently undulating. The lands on the rivers are generally of excellent quality, and constitute a large proportion of the area. Many fine estates and sundry old colonial residences grace the banks of the James—among them the homes of two Presidents.

The productions are corn, wheat, oats, peanuts, clover and the finest timothy hay. The grape produces abundant crops, and is rarely affected with disease.

An enterprising Northern settler has been experimenting here in grape culture with signal success. His results, as reported to the Commissioner, have been astonishing.

The timber consists of oak, pine, elm, ash, poplar, &c. Large amounts of ship timber and cord wood are annually sold and shipped to Northern markets.

Lying on two navigable rivers, and having a railroad (the C. & O. R. R.) on the north boundary, the means of transportation to the markets of the country are convenient to all parts.

Marl is abundant—both eocene and miocene—some of it rich in *green sand*.

ELIZABETH CITY

was one of the eight original shires into which Virginia was divided in 1634. Its form is nearly a square of seven miles on a side. It lies on Hampton Roads and Chesapeake Bay, and is intersected by several creeks. The surface is level, and the soil fertile, some of it highly so. The population is 10,792. Number of acres of land, 30,861, assessed at \$981,554. There are 15,000 acres in timber, consisting of pine, gum, oak, ash, and poplar. The productions are corn, wheat, and market trucks—the latter industry rapidly increasing. The supply of fish and oysters is abundant.

Elizabeth City is penetrated and almost surrounded by navigable waters, and the Chesapeake and Ohio railroad has been extended from Newport News to Old Point. The land is easily cultivated, living cheap, and the people well contented with their advantages.

Hampton is a flourishing town, the seat of that noble institution, the "Hampton Normal and Agricultural Institute," which was designed for the education of colored youths received from the lower schools of the State, and is now very prosperous. It is supported chiefly by landscript donated to the State of Virginia by the general government, and was founded in 1870. The general government has since made an appropriation for the education here of fifty Indian youths, and the experiment of educating Indians here has been very successful and gratifying.

They have gotten along well with the colored youths. This institution is doing an admirable work for the State and the country at large. Latterly the number of Indian young men has been increased, and some of the other sex added, and the work is very satisfactorily prosecuted.

ESSEX

was formed in 1692 from Rappahannock county—the records of the original county remaining in its archives. It lies on the south side of the Rappahannock river, about 45 miles northeast of Richmond, and is about 35 miles long and 6 wide. The population is 11,037; area, 162,954 acres, assessed at \$833,101.72. It is well watered by numerous tributaries of the Rappahannock river, some of which are navigable. Rappahannock river is well stocked with fish of all kinds common to this latitude, and oysters, and is navigable to the city of Fredericksburg, which is about 55 miles above Tappahannock, the county seat. The surface is generally level or slightly rolling. The river lands are, where properly drained, very productive and valuable. Back from the river the soil is more sandy, but productive. On Dragon swamp, which separates Essex from King & Queen, are some fine wheat lands with a heavy, tenacious soil of great fertility. This county was once the seat of great wealth, and still produces fine crops of corn, wheat, and oats. Tobacco has been, to a small extent, since the war, profitably raised. Marl is abundant in many parts of the county, and has been applied with great benefit in days gone by. Gypsum and commercial manures are found to act well, and clover and orchard grass flourish here. Peanuts might be profitably cultivated. Good land can be bought at from \$5 to \$10 per acre.

GLOUCESTER

was formed in 1661 from York. It is 27 miles long, and about eight miles wide, and contains 135,745 acres, valued at \$1,084,655.

It lies between Mob Jack bay and York river, and is watered by Ware and Severn rivers, and by numerous creeks. Planktank river forms part of its northeast boundary. These streams give very extensive tidal waters, mostly navigable for large vessels, and filled with fish and oysters of the finest quality.

The surface is generally level. The soil varies from light, sandy land to a heavy, compact clay.

The products are wheat, corn, oats, potatoes and other market vegetables. The stiff land produces very fine crops of wheat and clover, and the lighter soils grow good crops of corn, oats and vegetables.

Marl is abundant, and has been used extensively.

The means of reaching market are abundant and cheap by steamers and sailing vessels on the York, and from all points on the Bay and Ware and Severn rivers.

This is a pleasant and healthy climate, the people are hospitable and cultivated, the means of good living in easy reach of all who are willing to work.

Much land is in the market, with good improvements, and can be had at prices greatly reduced from ante-bellum valuations. Some of the finest estates in Virginia are in this county, and it was noted for wealth and refinement before the war.

The following minerals from Gloucester were on exhibition at the World's Industrial and Cotton Centennial Exposition at New Orleans:

1. Fossil shell, with quartz incrustation, from Gloucester Point.
2. Nodules of fragments of shells.
3. Miocene marl, with green sand, from Robins' Mill.

HANOVER

was formed in 1720 from New Kent; population, 18,000; there are 232,887 acres of land, assessed at \$1,779,039.

It lies between the Pamunkey and Chickahominy rivers; the northeast line is formed by the North Anna and Pamunkey, the latter stream being formed near the centre of that line by the junction of the South Anna with the North Anna. The central parts are well-drained by tributaries of these main streams.

The surface in the eastern part is mostly level, and the soil a light sandy loam, well-suited to trucking. The sweet potato here attains its greatest perfection, and the melons of Hanover are unsurpassed. In the central and western portions the surface is more rolling, and the lands suited to the culture of tobacco, the cereals and grasses.

On the Pamunkey are some fine wheat lands.

There are many fine estates, and the farmers are intelligent, judicious and industrious. The farm products aggregate a great bulk and value, and bring into the county large sums of money.

Marls of several sorts, both miocene and eocene, with green sand of the richest quality, are found here, and have been very profitably used on the lands.

Recent discoveries of deposits of phosphate of lime have been made on the Pamunkey river.

Mica, feldspar, asbestos and gneiss are found here.

This is a fine county for immigrants with small capital and industrious habits. The trucking business can be made very profitable here by persons familiar with gardening.

HANOVER COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

1. *Gneiss, with garnets.*
2. *Orthoclase feldspar crystals*, from mica mine near Noel Station, C. & O. Ry. The following from Virginia Department of Agriculture :
3. *Marl*—Dr. Christian, St. Peter's Church.
4. *Asbestos*—from Rockville : Leake.
5. *Shale*—Little River.
6. *Lignite*—Jura-Trias.
7. *Marl*—Old Church : G. L. Ernest.
8. *Green sand marl*—Hickory Hill : Gen. Wms. C. Wickham.
9. *Green sand marl*—Hickory Hill : Gen. Wms. C. Wickham.
10. *Coprolites*—Bassett farm, Pamunkey river. Contains 23.47 per cent. phosphoric acid.
11. *Bones, &c.*—Bassett farm. Contains 24.39 per cent. phosphoric acid. Analyzed by Dr. W. J. Gascoyne.
12. *Olive earth*—Bassett farm. . Contains by analysis of Dr. Gascoyne 2.64 per cent. phosphoric acid.
13. *Green sand.*

HENRICO

was one of the original shires into which Virginia was divided in 1634. Its length is 27 miles; mean breadth, about 8 miles. The surface is undulating; soil on the rivers very productive. It is drained on the south line by James river, and on

the north by the Chickahominy and by their tributaries. It produces largely of corn, wheat, oats, trucks, and some tobacco. The population, including Richmond, is 83,575. Number of acres of land, 163,949, assessed at \$2,682,129.

Having the large city of Richmond, with a population of 70,000, near the centre of its south border, and four railroads passing through this county, the products of the farm have quick, ready sale and small cost of carriage. Its productions are large and varied, and the profits of farming as good as in any part of the country. Green sand marl has been found in the lower or eastern part of the county, and used on the land with excellent results; also white marl, rich in lime, abounds in the lower end, and has been very profitably used. Grass succeeds well. There are several large nurseries and many large orchards and vineyards in the county; and dairy farming is extensively carried on.

The planting of vineyards is going on rapidly, as experience has shown that this county is admirably adapted to grape-growing. The "Norton," the best of American wine grapes, except the "Cynthiana," which is of the same family, originated just outside of Richmond, and almost all the native grapes do well here. A few years will probably see Richmond the centre of a great wine-making district.

The Richmond and Alleghany railroad runs along the southern border of this county, and the Chesapeake and Ohio, the Richmond and Fredericksburg, and Richmond, York River and Chesapeake railroads pass through the county.

Granite in great abundance, potter's clay and coal, exist in Henrico. "Natural" coke of excellent quality is largely mined in the upper part of the county. Iron pyrites have recently been discovered in this county three miles below Richmond.

Richmond, the capital and the largest city in the State, is situated in this county, on the north bank of James river, at the head of tidewater. It has extensive wharves and docks, with a depth of 18 feet of water over the bar, to be increased 24 feet. The tonnage of the port of Richmond amounted to the following in 1881: Steamers, 490,000 tons; sailing vessels, 205,000 tons. This does not include river steamers, tug-boats, or small sailing vessels. The water-power is afforded by a fall of 84 feet. At the lowest flow of the river this fall produces 9,500 horse-power. The whole of this power now in use is 4,200. From Boshers's Dam, nine miles above the city to tidewater is a fall of 116 feet, which, with the above flow, would produce 13,500 theoretical horse-power or 10,000 actual. For steam power the capacity is unlimited, as this city has access to the finest and cheapest steam coals. The real estate within the city amounts to \$30,066,782. Personal property, \$38,066,782.

MANUFACTURES.

Number of establishments.....	711
Persons employed.....	15,676
Capital employed.....	\$10,594,121
Annual sales.....	\$24,697,507

Religious Statistics of Richmond.

DENOMINATIONS.	No. of Churches	Member-ship.	Contributions.	SUNDAY SCHOOLS.	
				Officers and Teachers	Scholars.
Baptist—white.....	9	4,698	\$ 41,291 40	431	3,573
Baptist—colored	11	11,744	24,374 11	234	2,768
Catholic.....	8	5,700	2,355 98	61	705
Christadelphian.....	1	45	.....	.....	.....
Disciples.....	2	730	6,435 73	44	403
Friends.....	1	75	.....	.....	.....
German Evangelical.....	1	300	2,500 00	40	300
Jewish	3	250	6,200 00	10	150
Lutheran	2	410	4,635 00	32	221
Methodist—white	8	3,094	35,730 02	324	2,340
Methodist—colored.....	3	416	2,057 14	34	283
Presbyterian	5	1,553	23,943 33	162	1,039
Protestant Episcopal—white.....	9	2,475	61,448 52	255	1,789
Protestant Episcopal—colored.....	1	65	570 59	12	120
Totals.....	59	31,555	\$217,978 08	1,629	13,691

HENRICO COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Granite*, from Richmond Granite Company's quarry at Korah Station, R. and A. R. R.

2. *Granite*, two finished monuments each 10 feet high, from same company as above.

3. *Granite*, two varieties of Belgian blocks for paving, from same.

4. *Granite*, Belgian paving blocks, two varieties, from J. B. Mitchell & Co., Mitchell Station.

5. *Granite*, two cubes of building stone, dressed, polished, &c., from same as above.

6. *Lignite*, from "Dutch Gap" on James river, from Prof. Fontaine.

From Virginia Department Agriculture: 6. *Green Sand Marl*, from John W. Wariner. 7. *Marl*, J. W. Wariner. 8. *Fire Clay*, Dill's farm. 9. *Quartz*. 10. *Clay*, Westham, on R. and A. R. R.

ISLE OF WIGHT

was one of the original shires into which Virginia was divided in 1634. It is 35 miles long, with a mean width of about ten miles.

Population, 10,572. It has 187,065 acres of land, assessed at \$1,218,000.

The surface is mostly level, and the soil a light sandy loam. The productions are corn, wheat, oats, cotton, peanuts, and fruits.

The land is easily tilled, and produces good crops. Trucking is carried on very successfully.

This county has the James river for its north border, and is penetrated on the south by Blackwater and its tributaries. The Norfolk and Western railroad traverses the centre and the Seaboard and Roanoke railroad passes through the southern part. These roads, together with the navigation on the James and on Pagan creek, place all parts of the county within easy and quick communication with the markets of the whole country.

This county has valuable and extensive deposits of marl, rich in carbonate of lime. This and lime are largely used in peanut culture. Vegetables, fruits, and melons are shipped from this county to the Northern cities in large quantities. The supplies of fish and oysters are very large and valuable. Timber of all the varieties native to this section is abundant. The health of this county is as good as any portion of tidewater.

JAMES CITY

was one of the original shires. Its length is 26 miles, and its mean breadth eight miles. Population, 5,422; area, 91,520 acres; valued at \$370,000.

It lies in the peninsula formed by the York, the James, and the Chickahominy rivers. The surface is level, or gently undulating. The soil on the rivers is rich and productive; the ridge lands are generally light, but easily improved.

Fish and oysters abound, and are important sources of food. Land sells for \$10 to \$25 for improved; \$1 to \$10 for unimproved, per acre.

Marl is abundant, and was formerly used with fine effect on the soil. The ancient and renowned town of Williamsburg, the seat of William and Mary College, which has sent out many distinguished men from its halls, is in this county.

Corn, wheat, oats and peanuts are the principal crops. The lands are easily cultivated, and produce well for the labor bestowed. Fruits and all vegetables do well.

Many of the farmers are embarking in the trucking business, for which it would appear they have admirable facilities.

In addition to navigable waters, the means of quick access to the markets of the world have been greatly increased by the extension of the Chesapeake and Ohio railroad through the centre of this county to its deep water terminus at Newport News.

JAMES CITY COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Marl*, phosphatic green sand from the "Grove," or Carter's Grove, P. W. Hinton.
2. Phosphatic green sand marl, ground, for basis of "Carter's Grove Fertilizer," from Carter's Grove plantation on James River, from Hon. E. G. Booth.
3. *Glass Sand*, from the "Trenches," $1\frac{1}{2}$ miles from Williamsburg; probably the same from which glass was made by the early settlers, as mentioned by Capt. John Smith.
4. Fossil Teeth, from Jones' mill, one mile west of Williamsburg.

KING AND QUEEN

was formed from New Kent in 1691. It lies between the Mattaponi and Pianka-tank rivers, which, with their numerous tributaries, drain this county and make it one of the best watered in the State. It is about 30 miles long by 10 wide, and

contains 189,830 acres. The river lands, which constitute a large part of the area, are very productive, and the inexhaustible beds of marl found here afford the means of permanent improvement. The staple crops are wheat, corn, oats, hay, fruits, and vegetables.

This county is well situated for "trucking," the lines of steamers plying to West Point, just across the river from King & Queen, and in the Mattaponi, giving an outlet to the Northern markets, while by rail there is a close connection with Richmond. Fish, oysters, wild fowl, and other accessories to good living are abundant; and the people are conspicuous, even in Virginia, where this is the general characteristic, as industrious, moral, law-abiding citizens.

KING GEORGE

was formed in 1720 from Richmond county. Population, 6,532; area, 112,737 acres, assessed at \$812,795.

It lies between the Potomac and Rappahannock rivers, which form the north and south boundaries respectively, and furnish extensive navigable waters for the entire county; the width between the rivers being from five to ten miles, while the extent of river frontage is about twenty miles on each side.

Besides the valuable transportation facilities afforded by these tidal littorals, the streams furnish large resources in fish, oysters and wild fowl.

The lands on the rivers are very good, and produce valuable crops of wheat, corn, oats and vegetables, and are generally light and easily cultivated.

The means of plenteous, and even luxurious living are abundant, and render this a most desirable county to live in.

There are some large and valuable estates in this county, and it was once the residence of many wealthy families.

Fruits of all kinds succeed well in this section.

Marls of various kinds are found in this county.

KING WILLIAM

was formed in 1701 from King & Queen county. It is about 30 miles long by 8 miles wide. Population, 8,689; area, 166,897 acres, assessed at \$1,217,260, or about seven dollars per acre. It lies between the Mattaponi and Pamunkey rivers, which unite at its southeast corner and form the York. These are navigable for a considerable distance above their junction, and York river is navigable for the largest ships to West Point. West Point is the terminus of the Richmond, York River and Chesapeake railroad, and is a shipping point of much importance, with regular lines of steamers to New York and Baltimore. These streams give the county large tidal fronts, and afford valuable food products of fish, oysters and wild fowl, beside affording cheap transportation facilities convenient to all points in the county.

The surface of this county is level or slightly undulating, and the soil is mostly of a light sandy texture, easily and cheaply cultivated. The productions are corn, wheat, oats, vegetables, and fruits. "Trucking," or raising vegetables for market, is carried on to a considerable extent.

There is abundance of good marl, which has been used with much benefit to the soil. The green sand marl of King William is similar to that of New Jersey which has been found so valuable as to bear carriage considerable distances from the beds. The timber consists of pine, oak, chestnut, beach, poplar, and ash.

All these advantages render this county a very inviting field for new settlers, who are always heartily welcomed.

LANCASTER

was formed in 1651. It lies on the north bank of the Rappahannock river, where it debouches into Chesapeake Bay. Northumberland and Richmond counties bound it on the north. Area of the county, 78,000 acres, assessed at \$632,300, or about eight dollars per acre. Population, 6,145

The surface is mostly level, with some rolling lands. The soil is a sandy and clay loam, producing good crops of corn, wheat, oats, vegetables and fruits.

It is drained by numerous creeks running from the interior of the county, tributaries of the Rappahannock river and of Chesapeake Bay. There are two steamers plying between Baltimore and Fredericksburg, which touch at various landings in this county four times a week; and one steamer between Baltimore and Piankatank, touching at a wharf on Dymor's creek.

Ship and other timber, and a large quantity of cord-wood, is shipped from this county; and immense quantities of oysters are shipped annually.

A large area, consisting of apples, peaches, pears, apricots, plums, &c., of this county is in orchards. Corn is the chief farm crop, but some of the lands produce large crops of wheat. With cheap and quick transportation to the cities north, this county is enabled to throw her early products on the market at the most propitious time.

The health of the county is good. Consumption is rarely heard of.

MATHEWS

was created in 1790 from Gloucester. It is 20 miles long, and at its widest section about 9 miles across—a peninsula, extending into Chesapeake bay, united to the main land by a narrow neck of land scarcely a mile wide—so that its boundaries are almost entirely of water.

It contains 53,802 acres, assessed at \$640,761. Population, 7,507.

The surface of Mathews is almost a dead level—the soil light, easily worked, and fertile. Corn, wheat, oats, grass (a correspondent says about 200 acres of grass produce from 1 to 2 tons per acre), fruits, and vegetables are largely produced; and there is convenient and cheap transportation to Baltimore by steamers touching at the wharves. Mathews is famous for oysters and fish, which are a source of large revenue.

Owing to its almost insular position, Mathews is swept by salt breezes, and is said to be very healthy—a most desirable location for settlers. It may be remarked that Mathews is among the most thickly settled counties in the State (not reckoning cities), and the average assessment of lands is higher than in most of the counties of Tidewater. Only Elizabeth City, Norfolk, Alexandria, and Accomac surpass it.

MATHEWS COUNTY MINERALS AT N. O. EXPOSITION, FROM COL. RICHARD LAMB

1. *Grayish marl*, from Tallafarro farm, on Warehouse Creek.
2. Compact crystalline marl, from same locality as above.

MIDDLESEX

was formed from Lancaster in 1675. It comprises a strip of land about 30 miles in length, with an average width of five miles, lying between the Rappahannock and Piankatank rivers. Contains 83,077 acres of land, assessed at \$599,372.

The whole county is underlaid with beds of miocene marl, which has been extensively used with great benefit to the soil. Some of this marl is a nearly pure carbonate of lime, analyzing 95 per cent.

On the rivers the elevation of the land is from ten to thirty feet above tidewater—a mile or two back it rises to a hundred feet or more. The soil, varying in texture from sandy loam to the stiffest clay, is well-drained, easily tilled, productive, and very improvable; being very convenient to market (there are lines of fine steamers on both rivers bordering the county—time to Baltimore eight hours, and freight low), Middlesex offers great inducements to truckers, fruit-growers, and farmers.

Fish and oysters abound. There are several oyster and fish canneries and several fish factories in the county.

Timber is abundant, cheap, and of excellent quality, and there are many steam and water-mills in the county. In colonial times there were potteries here, there being beds of fine potter's clay.

Society is good, and the people will welcome immigrants. Lands are yet low-priced, but rising in value.

MIDDLESEX MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Blue marl*—from Hon. Robt. Healy's, Va. Dept. Agriculture.
2. *Shells, pebbles, &c.*—from Dr. J. Mason Evans, Va. Dept. Agriculture.

NANSEMOND

lies on the western side of Norfolk, and, like that county, extends from the North Carolina line to Hampton Roads, being, in round numbers, 30 miles long by 19 wide. It is watered by Nansemond river and other streams running into the James, and by tributaries of the Blackwater. Number of acres of land 256,242, assessed at \$1,514,767. Population, 15,963.

The surface of Nansemond is nearly level—the soil a friable, sandy loam, a description of land now considered the best for general purposes, the most profitable to work on account of economy of cultivation and adaptability to a great variety of crops. Marl is abundant in the county, and is much used.

Peanuts and cotton, corn, oats, and vegetables of all sorts (truck) are the principal products of this thriving county. A large portion of the land is devoted to "trucking," easy access to market being furnished by the Nansemond river and the steamers plying thereon, and by railroads to Norfolk and Portsmouth (the Norfolk and Western, and the Seaboard and Roanoke).

The potatoes of Nansemond have long been celebrated, and other vegetables grow in equal perfection and ripen early, especially melons, peas, and tomatoes.

Fish and oysters abound. There is yet much fine timber in this county, mostly pine, cypress, and juniper.

This is one of the most prosperous counties in Virginia, the people being industrious and ready to avail themselves of the many natural advantages with which Nansemond is blessed.

Suffolk, the county seat, is a busy and thriving town, the centre of a large local trade. It is connected with Norfolk and Portsmouth by railroads, as above mentioned, and by river navigation, and is the terminus of the Suffolk and Carolina railroad.

Suffolk has recently been visited with a heavy calamity—a fire which consumed much of the business part of the town—but it is believed that the energy of this thrifty people will soon rebuild their town and revive its prosperity.

NEW KENT

was formed in 1654 from York. It is 26 miles long and seven to nine miles broad, and contains 130,209 acres of land, assessed at \$378,791. Population, 5,514.

This county, lying between the Pamunkey, York and Chickahominy rivers, has extensive and fertile bottom lands, with navigable streams on two sides. Two railways furnish added facilities for access to market. The Richmond and York River railroad on the north, and the Chesapeake and Ohio railroad in the southern part, are of convenient access to all parts of its territory, and bring it into close connection with all the trade-centres of the country.

The soil is light and sandy in the interior, and varies from sandy to stiff clay on the river bottoms.

The productions are corn, wheat, oats, and early vegetables and potatoes; for which latter the soil is well-suited.

Marl is abundant and of excellent quality. That near St. Peter's church contains about 90 per cent. carbonate of lime, and has been successfully used on the lands and even for mortar in laying bricks.

The timber consists of oak, hickory, maple, dogwood, pine, and other valuable trees. Much cord-wood and ship-timber is annually marketed from this county.

The people are intelligent and cultivated, and are noted for their hospitality and sociability. Lands can be cheaply bought, the price varying from \$2 to \$20 per acre. It is a healthy county, with the exception of mild types of intermittent fevers easily controlled.

NEW KENT MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Phosphate Rock*—from R. H. Lacy. Contains 23.20 per cent. phosphoric acid—Va. Agricultural Department.
2. *Iron Ore*—from Va. Agricultural Department.
3. *Green Sand Marl*—from J. P. Pearsons, Tunstall's—from Va. Dept. Agriculture.
4. *Shell Marl*—from Tunstall's—Va. Dept. Agriculture.
5. *Shell Marl*—from near St. Peter's Church—Va. Dept. Agriculture.

NORFOLK

was formed in 1691 from Lower Norfolk. It is twenty-four miles long with a mean breadth of nineteen, and stretches from the North Carolina line to Hampton Roads in the north, with Elizabeth river and its branches penetrating every part. In the southwestern corner, partly in this county and partly in Nansemond, is the celebrated "Dismal Swamp," which, lying higher than the surrounding country, furnishes an abundant supply of the purest water, which can be carried to the cities of Norfolk and Portsmouth.

The population of Norfolk county, including Norfolk city and Portsmouth, is 58,942. Number of acres of land, 227,926; assessed at \$15.62 per acre.

The surface of the county is level, the soil a sandy loam with clay sub-soil. Nature seems to have designed it for a great garden, and it is rapidly being utilized in that way. Gardens and trucking farms are spreading in every direction around Norfolk and Portsmouth—soil, climate, market facilities, all concurring to give an unexampled impetus to the trucking business. Other crops can be raised—corn, oats, peanuts and other field crops—but market gardening is found so much more profitable that all energies are being applied in this direction. Communication with all the great cities north of Virginia is now rapid and easy, and freights are cheap. The recent opening of the New York, Philadelphia and Norfolk railroad, shortening the time to the great markets by five hours, has given a great impetus to market gardening. Early vegetables and strawberries of the finest quality are shipped in immense quantities and bring a large amount of money into this county and those adjacent. Perishable fruits and vegetables can be gathered in the evening and placed in the New York market by sunrise next morning.

Lands are rapidly rising in value, and already very high in the vicinity of the cities.

Norfolk is celebrated for the excellence and quantity of the oysters and fish brought to its market, and for the abundance of game.

Norfolk and its twin sister, Portsmouth, are rapidly growing in importance. Lines of steamers to Baltimore, Philadelphia, New York and Boston, besides those running inland to Richmond, Smithfield, Newport News, and those across the bay to Cherrystone and Cape Charles City, and by the canal to Currituck, throng the fine harbor. The foreign trade of Norfolk, too, is considerable, and increasing, as Norfolk has become a great cotton port.

The Norfolk and Western railroad, the Seaboard and Roanoke, and the Norfolk and Carolina railroads terminate here, and the railroads to the popular sea-bathing places at Ocean View and Virginia Beach have made these places easily accessible and draws great numbers of people to Norfolk.

A great naval station and dry-dock of the United States is located here, and the largest ships can be accommodated in this fine harbor and dock.

The enterprise and public spirit of the people has kept pace with the development of their resources and of their commerce. Fine shell roads, radiating in sundry directions from Norfolk, have superseded the dirt roads that were used a few years ago.

No part of the country offers a more inviting field to enterprising and industrious settlers than does Norfolk county.

NORFOLK COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

Collected by Richard Lamb, C. & S. E., Norfolk, Va.

1. *Peat*, from the Dismal Swamp.
2. *Swamp Soil*, from the Dismal Swamp.
3. *Swamp Soil*, from same; land produces 50 to 60 bushels corn per acre.
4. *Sandstone*, found 18 feet from surface in excavating for sewers.
5. *Clay and Brick Sand Tiles*, made from same, from George Oldfield's brick-yard, near Norfolk.
6. *Giant Oyster Shell*, half of one, weighing 6 pounds, from eastern branch of Elizabeth river.

7. *Fossil Crab*, found 60 feet below the surface in excavating for dry-dock at U. S. Navy-yard, at Gosport.
8. *Singing Sand*, from deposit near Ocean View.
9. *Fossil Pine Wood*, nearly decomposed, found 10 feet below the surface in Norfolk city.
10. *Lime* burned from oyster shells.

NORTHUMBERLAND

is one of the five counties constituting the "Northern Neck," which lies between the Potomac and Rappahannock rivers and Chesapeake bay. Northumberland county was formed in 1648. It is 25 miles long and about 7 to 8 miles wide, and contains 117,930 acres, valued at \$809,199. Population, 7,925. The surface is mostly level. The soil on the streams is a sandy loam, with clay subsoil, and is very well adapted to wheat. The ridge lands have a light soil, and are generally thin, but easily improved. The farm crops are corn, wheat, oats and trucks, or green vegetables for city consumption. Almost every part of the county is accessible to water transportation by the creeks and estuaries from the bay and Potomac, and the projected railroad from Richmond, the "Richmond and Chesapeake," is to have its terminus in this county, near the estuary of the Potomac, and the cities of Alexandria, Georgetown and Washington are largely supplied from this county with melons, fresh vegetables, oysters, fish, wild fowl and poultry. There are valuable fisheries in this county. "Fish chum," or the refuse from fish-oil factories, is largely used as a fertilizer here, as well as in many other counties of this section, especially on wheat, with marked benefit. A recent correspondent says there are at least 700 hands engaged in the fish business. Fish chum is shipped to Charleston, and other places, for making fertilizers. There are also several fertilizer manufactories in the county (which incorporate the phosphate rock with fish chum) with expensive steam machinery. There is marl in this county. Eight hundred to one thousand barrels of eggs and large quantities of turkeys are annually sent to market. Farmers are generally out of debt. The county levy is very low. There are only two bar-rooms in the county. This is a fine part of Virginia, and offers pleasant homes and good inducements to immigrants.

PRINCESS ANNE

was formed in 1691 from Norfolk county, and lies on the Atlantic ocean and Chesapeake Bay, extending south to the North Carolina line. Population, 9,422; area, 162,977 acres, assessed at \$1,185,397.

The surface is level. The soil a sandy loam, resting on a yellow clay subsoil, is easily tilled and is generally productive. The best lands are in Holland Swamp, Eastern Shore Swamp, and on Back bay.

The productions are corn, oats, potatoes, trucks and fruits. A large part of the county is devoted to truck farming, and great quantities of vegetables and fruits are annually shipped to the Northern markets. The shipments of fish, oysters and wild fowl from this county produce a very large revenue to the citizens of the county. The fisheries on Cape Henry beach, Lynnhaven bay and river are very valuable. Lynnhaven bay oysters are renowned for their fine size and flavor.

The timber consists of oak, pine, gum, cedar, cypress, elm, holly and persimmon. The "Seaboard district," comprising the northeast angle of the county, is perhaps the best timbered region of lower Virginia.

The transportation facilities are ample and convenient to all parts. The ocean front is about twenty-three miles in extent; Back bay and North river are both navigable, and comprise a great extent of water fronts in the southern part, while the northern portions have the Eastern Branch of Elizabeth river, Lynnhaven river and the bay shore. Besides these facilities for market by water, there is the Virginia Beach railroad from Norfolk, passing across the county to a beautiful and most attractive watering place called "Virginia Beach," on the Atlantic shore.

With good lands, easily tilled, abundant supplies from the water, cheap and convenient access to market, and a climate both pleasant and salubrious, it would seem that here is a place where all should be happy and contented.

PRINCE GEORGE

was formed in 1702 from Charles City. Population, 8,861; area, 179,206 acres, valued at \$1,098,501.

The surface is mostly level, and the soil on the rivers is very fine. Its north and northwest boundaries are formed by the James and Appomattox rivers, which give over forty miles of deep-water frontage to this county. The lands on these rivers are noted for fertility. Many broad and fertile bottoms are found on the numerous tributaries of these two rivers, on Blackwater river, and on the tributaries of Nottoway river in the central and southern portions of Prince George.

The productions are wheat, corn, oats, peanuts, cotton and tobacco. The light warm lands of the southern portions of the county are well-adapted to the peanut and cotton.

Marl of various sorts is abundant, and has been extensively used, with good results. Near Coggin's Point, and at other places, is found the valuable green sand marl; and this is the locality where the late Edmund Ruffin conducted many of his experiments in the use of marl and demonstrated its value.

The facilities for reaching market are convenient to all parts of this county, and are furnished by the navigable rivers alluded to above, and by the Norfolk and Western railroad, passing through the central portion, with a branch road from the city of Petersburg, near its western boundary, to City Point, at the confluence of the Appomattox and James. This is a shipping point of some consequence, with a sufficient depth of water at its wharves for the largest class of vessels, and was used as a base of supplies for the United States troops during the siege of Petersburg.

Much fine timber and cord-wood are shipped from this county to the North.

The lands of Prince George are well-adapted to fruit culture, especially the grape, and encouraging progress is being made in this direction. A valued correspondent, living in the vicinity of the Courthouse, says: "I know of about 9 (nine) acres in vineyards between here and Petersburg. One party commenced about seven years ago, and has extended his vineyard to eight acres, and is making a great deal of money—has refused \$8,000 for his place that he gave \$1,500 for, and the vineyard has been the cause of it."

RICHMOND

was formed in 1692 from old Rappahannock. Is 30 miles long and about 7 miles wide. It lies on the north bank of Rappahannock river, which is navigable here for large vessels, and is watered by Rappahannock river, Moratico creek, Farnham creek, Tottrisky creek, Rappahannock creek, Menokin creek, and others; water-power good and ample. The low grounds are very fertile, producing fine crops of corn, wheat, oats and vegetables. The upper or forest lands are rolling, and the soil is a light sandy loam with red clay subsoil, susceptible of a high state of improvement, and is worth, at present prices, from \$5 to \$20 per acre. The river along its front abounds in fine fish and oysters, the shad and herring fisheries being very productive and profitable.

Warsaw, the courthouse, is situated about the centre of the county, six miles from the river, and contains a population of about 300.

Population, 7,199; number of acres of land, 115,887, assessed at \$625,268.

There are 33,843 acres in timber of oak, hickory, chestnut, pine, cedar, walnut, poplar, dogwood and maple.

Acreage in wheat, 4,266; oats, 500; buckwheat, 75; potatoes, 200; clover, 2,133; orchard grass, 200; in orchard, 1,277—in apples, peaches, pears, plums, apricots and cherries.

This is reported to be a good grazing country. Sheep especially are found very profitable.

There are vast quantities of marl in this county, both blue and white marl, which has been used with good effect.

The winters are mild, cultivation of soil easy and cheap, living abundant and easily obtained, access to market very convenient, and altogether a very pleasant and desirable country to live in.

Three samples of blue marl in this county average 16.40 per cent. of carbonate of lime with some green sand.

SOUTHAMPTON.

was formed in 1874, from Isle of Wight. The surface is level, and the soil productive. It is watered by Meherrin, Nottoway, and Blackwater rivers, which furnish a good supply of fish.

Population, 18,074. Number of acres of land, 362,562, assessed at \$1,520,416.

The principal productions are corn, cotton, peanuts, trucks and potatoes. Soil, a light sandy loam, with red clay subsoil. Marl exists in the county, and has been used successfully, though not extensively. The Seaboard and Roanoke railroad runs through the southern portion of the county, and the Norfolk and Western passes near its northern limits. There is much valuable timber, as oaks, pine, chesnut, &c.

Southampton is amongst the most thriving counties of this prosperous section of Virginia. The population is intelligent and industrious, and her principal staples, cotton and peanuts, skillfully handled, have brought much money into the community. This is the banner county in the State in the production of cotton, between five and six thousand bales being sent to market annually.

SURREY

is one of the oldest counties in the State, being just opposite Jamestown, the cradle of the colony. It has James river for its northern boundary, and the Blackwater for a portion of its southern. Number of acres 161,499, assessed at \$741,229.

About three-fourth of the county is in timber, chiefly pine and oak—on Blackwater is very fine cypress timber. A large business is done in shipping lumber and cord wood, and much ship timber to the Northern markets.

The whole county is underlaid with marl, much of it of very fine quality.

Besides the usual field products—corn, wheat, oats, &c.—peanuts, cotton and potatoes are largely grown, especially the first; and fruits are very extensively cultivated, more than 10,000 acres being in orchards—apples, pears and peaches—and a large surface in small fruits.

The soil is especially adapted to all these last mentioned products, being light, kind, easily cultivated and improved.

This county has rapidly improved since the war—there are evident signs of thrift and prosperity. A large accession has been made to the population by northern settlers. At Claremont, on James river, a flourishing colony has been founded, and is attracting much attention. This town is the deep-water terminus of the Atlantic and Danville railroad, which has been constructed through Surry and Sussex to Hicksford in Greensville county, crossing the Norfolk and Western road at Waverly station, and will be extended through Greensville, Brunswick, Mecklenburg and Halifax to Danville. This, it is believed, will give a great impetus to the settling up of this prosperous county.

SURREY COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. Yellow marl, from Blair Pegram.—Virginia Department of Agriculture.
2. *Serpula*, a mass of fossils from near Surry courthouse, from Richard Lamb, C. & S. E.

SUSSEX

was formed in 1754 from Surry, the Blackwater river being the boundary between the two counties. By this river and its branches Sussex is watered in the northeastern parts, while the Nottoway meanders through the heart of the county, with many tributaries joining the main stream here.

Number of acres 295,791, assessed at \$855,629.

The soil of Sussex, like that of the adjoining counties, is light in general, and is very productive on the streams. The crops for which it is best suited, and which are most cultivated, are peanuts, cotton, corn, and oats. Marl is abundant, and has been used with very fine effect.

This county has fine railroad facilities, the "Norfolk and Western" passing through it in the northeast, the "Petersburg and Weldon" in the west, and the "Atlantic and Danville" from northeast to southwest, through its largest diameter. The construction of the last-named road has given a great impetus to the business of the county.

WARWICK,

now almost the smallest county in the State in area, and the smallest in population, was one of the eight original shires, and was densely peopled; there were in this little county six parishes. It contains 43,120 acres, assessed at \$305,367. The surface is level, and the soil productive. The average yield of wheat is said to be 15 bushels, of corn 26, of oats 35 bushels—if so, it is far above the average of the State. The land is easily cultivated and very improvable—and there are large deposits of excellent marl. Fish, oysters and wild fowl, are abundant.

The population of Warwick was in 1880, only 2,264; but since that time the extension of the Chesapeake and Ohio railway to Newport News in the southeastern angle of this county, has made an immense difference in the status of Warwick, Newport News having grown to be an important shipping point—resorted to by ocean steamers. This is, perhaps, the best coaling station on the continent—and there is here a grain elevator with a capacity of 1,500,000 bushels and wharves on a grand scale, with depth of water to accommodate the largest ships that float.

WARWICK COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

Case of bottles of borings from Artesian well, 630 feet deep at Newport News. They represent the Quarternary and Tertiary beds of Virginia, and probably extend into the Jurasso Cretaceous. Loaned by C. W. Smith, general manager of the Chesapeake and Railroad.

WESTMORELAND,

is bounded by Potomac and Rappahannock rivers, and counties of King George, Richmond, and Northumberland. Average length 30 miles, width 10 miles. Area, 178,581, assessed at \$839,147. Population, 8,849. The surface is generally level, broken and hilly about the sources of the streams. Soil good, light loam resting upon red clay; in some sections the red clay reaches the surface. It is well watered; pure springs abound, and very good well water is in easy reach. Numerous tributaries of the Potomac penetrate inland for some miles, furnishing good steamboat navigation. Regular lines of boats give access almost daily to Washington and Baltimore. These inlets abound in oysters and fish, and offer good sport in winter for the fowler in ducks and geese.

A third of its surface is woodland. In many parts are found pine, four or five varieties of oak, hickory, cedar, chestnut, locust, poplar, and gum. Valuable white oak is only found, however, in small detached parcels. Many orchards of fruit—peaches, apples, and plums are found. Corn, wheat, and clover are the staple products. Winter oats are cultivated profitably. Potatoes of both varieties grow well; the soil is very fine for all varieties of vegetables, and trucking is increasing. Orchard grass and Timothy are being introduced. Their cultivation, and raising clover seed for market are decided successes. Good land yields from 10 to 35 bushels of wheat; from 25 to 50 bushels of corn; from one and a-half to two tons of hay.

The prices of land range from \$3 per acre up to \$30.

Good public schools, 22; several private schools; churches, 20—Baptist, 9; Methodist, 5; Episcopalian, 6.

There is some migration to this county, chiefly from the States; the population is homogeneous; society refined and cultivated; crimes of very rare occurrence; homicides almost unknown.

Lands are easy of cultivation; capable of sustaining a population ten times as numerous as that it now has. Manners of the people, simple and unostentatious. Cost of living, owing to kindly soil and good climate; facilities of shipment to market, and abundant supply of oysters, crabs and fish from its waters is perhaps as low as in any section of the Union.

Unbounded supplies of fertilizing material lie in large measure unused on every farm. Marl in many locations, marsh mud, oyster-shell lime, are within easy reach of every industrious farmer.

Increased attention is being paid to sheep husbandry. Flocks of sheep average from \$2.50 up to \$6 per head of annual profit. Cattle do well—oxen often weigh 1,000 pounds at four to five years old, fed in winter upon dry fodder only, and then upon the natural grasses of the country.

The head streams of the estuaries, or creeks, afford fine water-power. Saw and grist-mills are found all through the country.

Men from any section coming to share our fortunes are gladly welcomed.—*Correspondent.*

YORK.

This county like its neighbor Warwick, is one of the original shires of the colony. It is a long, narrow county, lying along the south bank of York river and extending to Chesapeake Bay, and the estuary of Back river, with a large water front and intersected by numerous tidal creeks. This county is abundantly supplied with fish, oysters, and wild fowl. Deer and other game are plentiful, as indeed is to be said of the adjoining counties.

The surface of this region is generally level, the soil inclined to be sandy, easy of cultivation, productive when well managed, and responds readily to improvement. Marl is abundant, and tells wherever applied.

Corn, wheat, oats, and peanuts have been the staple crops. Since the extension of the Chesapeake and Ohio railway, which skirts the southwestern edge of this county, much of the land has been brought into quick and easy communication with Newport News and the great markets of the North, and a more diversified style of farming is now rendered possible, and will soon be found to be very profitable.

YORK COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Pectens*, scallop shells, bank of York river; Va. Dept. Agriculture.
2. *Marls*, fossils, corals, tertiary limestone cut into millstone, from bluffs of York river near Yorktown.

The following were collected by Richard Lamb, C. & S. E.:

3. *Miocene marl*, white, pulverulent, 90 per cent. lime carbonate, from near Yorktown.
4. *Clay and iron oxide*, massive, sub-crystalline, from "York Cliffs."
5. *Shells*, fossil and recent, from "York Cliffs."

MIDDLE VIRGINIA.

The next, as we go westward, is the "Middle Division," comprising the country from Tidewater to the low range of mountains parallel to the Blue Ridge, and about twenty miles distant from it. This outlying range extends from Loudoun to Pittsylvania, with somewhat irregular intervals and direction, but with a general conformity to the course of the Blue Ridge.

It may be observed here that the respective limits of the "Grand Divisions" of the State assigned by various authorities are not positively defined, but vary according to the point of view from which the subject is regarded. For instance, Hotchkiss, subordinating other considerations to the geological formation of the country, assigns to "Middle Virginia" the four counties of Stafford, Prince William, Fairfax, and Alexandria. They belong for the most part to the archæan or primary formation, although they skirt the Potomac and are intersected to some extent by tidal creeks.

For the latter reason, Maury assigns them to the Tidewater Division. Further South, the counties of Caroline and Hanover, which are assigned to the Tidewater Division, are in part in the archæan formation, and *vice versa* the county of Chesterfield, which is classed with the "Middle Division," has a tidal front of fifty miles on James and Appomattox rivers, and a considerable border of purely alluvial land; but by far the greater part of its territory is in the archæan, to which it is assigned. And the "low range of mountains" spoken of as making the line between Middle Virginia and Piedmont does not conform exactly with the county boundary lines, so that many of the counties have part of their territory overlapping the adjoining division; but they are properly assigned to the one in which the greater part is comprehended.

The classification of Hotchkiss will be adhered to here.

Thus reckoned, "Middle Virginia" consists of twenty-five counties, and contains between twelve and thirteen thousand square miles, or nearly a third of the State. As said, this is a primary formation, resting for the most part on granite and gneiss, but here and there on the new red sandstone, and the soil varies widely. Here is the great tobacco region of Virginia—the lands of the upper and lower jurassic period—a new red sandstone being especially adapted to the finer qualities. This formation is identical with that of Lancaster county, Pa. and the lower Connecticut Valley, where the cultivation of seed-leaf tobacco has enriched the community to an almost incredible degree. A strip of the former (the "upper jurassic") extends along the line of the Richmond, Fredericksburg and Potomac railroad almost its entire length. Considerable sections of the lower jurassic are found in Pittsylvania, Halifax, Campbell, Appomattox, Prince Edward, Cumberland, Buckingham, Albemarle, Chesterfield, Henrico, Orange, Culpeper, Fauquier, Loudoun, Prince William, and Fairfax.

These older "Mesozoic" areas are aptly described by Hotchkiss in the *Virginias* as islands in the archæan region of Midland and Piedmont Virginia. Professor Fontaine says of them: "They are all situated east of the Blue Ridge, and most of them are found in the terrane of the crystalline azoic rocks. They lie in the eroded and upturned azoic strata, and are formed out of the material yielded by them. They lie in narrow strips isolated from each other, and seem to have been deposited in fresh, or at most, brackish water. Some of these areas were at some period in their history in the form of marshes, or had such a character as to permit the formation of an abundant vegetation and the accumulation of a considerable amount of coal. In Virginia coal is found only in those areas that lie farthest east."

Those in which coal is found are the Richmond and the Cumberland areas. But 't is of their value in an agricultural point of view that I would speak more particularly here—of their fitness for the production of choice tobacco. Much has been said of the unprofitableness of tobacco—of the sure and rapid impoverishment of the lands in which it is grown. That it has tended to produce that result, indirectly, is undeniable—but that this result is the necessary consequence of tobacco-raising is certainly not true. Even in Virginia, where the system is, or has been, of the very worst, instances can be shown of steady improvement of farms on which large crops of tobacco are grown—and, in the Northern States, whole communities can be pointed to as evidence that tobacco-growing does *not* necessarily exhaust the fertility of a country. There is, perhaps, no part of the United States more prosperous than Lancaster county, Pa.—the largest tobacco-growing county of the Union. Land there sells at prices almost fabulous, whenever, by any chance, it is put upon the market.

Other instances might be cited—in Connecticut, New York, Wisconsin. These people are prosperous because they believe in high farming—in getting large returns from the land, both in quantity of crop and in quality. The tobacco they make—the "seed-leaf," for cigar-wrappers—gives a heavy yield, and is eagerly sought after by buyers at prices that leave a large profit.

This digression is to the point in calling attention again to the important fact that these "islands," just described—these large "areas," scattered through Virginia—are of the same character of soil with the great county of Lancaster—that the *climate* of Virginia is as good for tobacco-growing—perhaps better—and that the land can be bought for a tenth—nay, a twentieth—of the price.

Middle Virginia is an undulating country—hills, table-lands, and intervalles—giving springs and never-falling water courses everywhere. The soils vary greatly—the bottom lands generally very fertile, and the up-lands are often very productive, especially when the rocks contain epidote and some varieties of horn blende.

The irregular limestone formation along the western borders of Middle and the eastern of Piedmont does not make a characteristic soil except in a few localities. Here and there the soils are exceedingly fertile, as in parts of Orange, Culpeper, and Loudoun, which counties are assigned to "Piedmont," although part of their territory belongs of right to the "Middle Division."

The productions of this region are varied. Tobacco has been mentioned as the staple of a large part of this division of the State, but its cultivation is by no means universal—in many counties it is not grown at all. Everywhere the cereals and fruits of temperate climates, notably the apple and grape, grow in perfection; and while we have not yet reached the grazing sections proper, we find clover, timothy, orchard and other grasses growing here and there in great luxuriance; and they show a natural adaptation to grass which, however, so far from having

been encouraged, has persistently been thwarted—fought against—from the first settlement of the country until recently. “Killing grass” has been the object kept steadily in view in growing tobacco and Indian corn, and with the large force of slaves inhabiting this region, was so effectually done that it came to be believed by many that the valuable forage and pasture grasses would not grow here, despite the fact that “blue grass”—“*poa-compressa*” (the true “blue grass”)—the identical grass which is so highly valued in Fauquier and Loudoun for making fat pastures—is the grass which has given the planters most trouble to keep under, which has made such a struggle for existence that it has never been extirpated in this region; but, where it has half an opportunity, will assert its rights and will take possession of the land, crowding out wheat or whatever may, at the time, be in occupancy.

Clover has long been successfully grown here; and the idea that timothy, orchard grass, &c., would not succeed has been disproved by the logic of facts—there is scarcely a county in this region in which there are not meadows that would compare favorably with the best anywhere; few though they be, they demonstrate the possibility. The renovation of this healthful and most improvable region will be brought about by clothing a large portion of the county with meadow and pasture grasses.

FOREST GROWTH.

The “Sylvia” gradually changes as we ascend from the Tidewater Division to Piedmont. The cypress disappears, the long-leaf pine ceases to grow after the first tier of counties is passed, and the cedar and holly, the gum and willow oak, become more and more infrequent. The short-leaf, or hard yellow pine, furnishes its valuable timber in every part of Middle Virginia, but does not take exclusive possession of large tracts of land as in Tidewater, except where it is found as “second growth” on lands which have been cultivated and then turned out to grow up again. There it takes the place of the genuine “loblolly” or old-field pine of Tidewater—the long-leaf variety—the “*pinus taeda*” of Botanists. In the forests of Middle Virginia the pine (short-leaf, yellow and two other varieties too rare to deserve a description) grows along with the various oaks, the tulip tree, hickory, walnut, locust, maple, ash and other timber of minor importance; and on the streams sycamore, beech, birch, willow and maple. At some distance from the mountains we again find chestnut in large quantities. In fine, the forest growth of this section is of singular variety, beauty and value.

MINERALS.

The mineral resources of this region are very great. Besides the coal of the mesozoic areas of Richmond and Farmville, heretofore alluded to, this country yields gold, silver, copper, and iron ores in great variety and abundance, and for architectural purposes fine gray granite and gneiss brown stone. Potomac or brecciated marble, and the finest slate for roofing purposes; also, mica, kaolin, asbestos and limestone.

Sulphurets of iron are abundant in Louisa county and have been shipped in large quantities. They are rich in sulphur—one sample having analyzed 52.73 per cent.

Another deposit contained 43 per cent. of sulphur, and 5.89 per cent. of copper. These are found in that remarkable formation known as the “gold belt” of Virginia—a strip of land from 15 to 20 miles in length, and running for two hun-

dred miles through the State. The rocks of this belt are the slates, traps, steatites, &c., of the primary, dipping at high angles, generally to the east. Interstratified with these are numerous veins of gold bearing quartz, magnetic, hematite and specular iron-ores, and the sulphurets of copper (and of iron) referred to.

Large amounts of gold have been taken from this belt—some of it from surface washings.

The veins of iron ore are numerous, some of the magnetic ones having a thickness of four feet; the beds of hematite ore, particularly those upon either border of the belt, as along James river, where it runs parallel with it, and in the "Wilderness," near the Rappahannock, are very thick and extensive. The first successful furnaces in America, those of the colonial Governor Spotswood, were supplied from the latter beds.

There are also large beds of this ore where the Chesapeake and Ohio railway crosses the belt. In this vicinity the valuable sulphurets of iron and copper are found, and there will soon be large sulphuric acid works and a manufactory of fertilizers here, turning out copper and iron as by-products.

The slates of the middle country are excellent for all purposes, notably those of Buckingham and Amherst counties. In Buckingham they have been long and extensively quarried for roofing, flagging, mantles, &c. The sandstones of the imposed "middle secondary" are valuable for building purposes, as are also the "brownstones" of the red sandstone, which are extensively quarried at Manassas. The infusorial earth, so abundant in Richmond, is valuable as a polishing material. Ochre of very fine quality is found in Chesterfield, near Bermuda Hundred, and is being shipped from that point.

RAILROADS.

This country is favored in respect of means of transportation, railroads penetrating it in every direction. The great "coast line," which passes through the State from Washington to Weldon close to the divide between Middle Virginia and Tidewater, almost in the line between the archæan and the tertiary formations—sometimes in one and sometimes in the other—belongs equally to both. From Washington and Alexandria ray out, the Washington, Ohio and Western, and the Virginia Midland, with its various branches; from Fredericksburg, the narrow guage to Orange C. H.; from Richmond the Chesapeake and Ohio stretches out through Henrico, Hanover, and Louisa into Piedmont, and thence to the Ohio and beyond; and the Alleghany, along the beautiful Valley of James river through Middle Virginia into Piedmont and Appalachia. The Richmond and Danville road penetrates this part of Virginia for a hundred and fifty miles before passing into North Carolina, and sends out a branch at Keysville and another at Sutherland. The Brighthope road from Bermuda Hundred taps the coal region at Clover Hill, twenty-odd miles away. At Petersburg, the Norfolk and Western road passes from Tidewater into Middle Virginia, and after a course of more than a hundred and twenty miles in this division, strikes out southwest through Piedmont and the Valley to the Tennessee line at Bristol. The "Atlantic and Danville" is in course of construction from the point to which it is now completed, Hicksford, in Greensville county, to Danville and beyond; and the southern link of the Virginia Midland extends from Lynchburg to Danville with a branch from Elba Station into Franklin county. All these roads intersect this division of Virginia, and there are others projected, and probably soon to be built.

WATER.

This is a marvellously well watered region—a land of living springs and perennial water-courses, rivers, creeks, and brooks. The eastern edge of the belt has been described as “a granite rim rising some 200 feet above the tide waters, setting bounds to their further flow inward, furnishing fine water-power by the falling of the rivers over it, and sites for commercial and manufacturing towns. In every part of the “Middle Country” there is abundance of water—it would be hard to find a field in which there are not springs or brooks—and sites for mills are nowhere far to seek.

Most valuable mineral waters are found in this region. The lithia springs of “Buffalo,” in Mecklenburg, have long had a wide reputation, and the more recently discovered lithia and other springs near Farmville, and at “Wolftrap,” in Halifax, are rapidly becoming known throughout the country. The sulphur springs in Powhatan (Huguenot) and in Amelia were once much resorted to.

A recently discovered well at Chase city, in Mecklenburg county, where is a colony of Englishmen, furnishes a water which is said to have made some remarkable cures of dyspepsia.

HEALTHFULNESS.

Except in limited localities in and near certain water courses, where malarial diseases prevail to some extent, this is an exceptionally healthy region, perhaps as favorable to longevity as any part of America—we might almost say “of the world.”

MIDDLE VIRGINIA BY COUNTIES.

GROUPING IN NATURAL SUB-DIVISIONS.

COUNTIES.

NORTHSIDE GROUP.

Potomac Basin.....	{ Fairfax. Alexandria. Prince William. Stafford.
Pamunkey Basin.....	{ Spotsylvania. Louisa.
James Basin.....	{ Fluvanna. Goochland.
James-Appomattox Basin.....	{ Buckingham. Cumberland. Powhatan. Chesterfield. Appomattox.
Appomattox Basin.....	{ Prince Edward. Amelia.

SOUTHSIDE GROUP.

Nottoway Basin.....	{ Dinwiddie. Nottoway.
Meherrin Basin.....	{ Lunenburg. Brunswick. Greensville.
Roanoke Basin.....	{ Campbell. Charlotte. Pittsylvania. Halifax. Mecklenburg.

In the following brief description the counties are arranged in alphabetical order, as before, for convenience of reference.

MIDDLE VIRGINIA BY COUNTIES.

ALEXANDRIA

was originally a part of Fairfax. Having been ceded to the General Government as a portion of the District of Columbia, and retroceded to Virginia in 1847, it was organized into a county. The area is very small, being only ten miles long and five miles wide, with 18,329 acres, assessed at \$1,772,988. The population, including Alexandria city, is 17,546.

This county lies along the south bank of the Potomac river, with the District of Columbia containing the Federal Capitol, Washington city, and Georgetown, on the opposite bank. The county seat is the very considerable town of Alexandria, on the Potomac. The commercial advantages of Alexandria city and county are unsurpassed, the facilities for shipping and means of access to market being all that could be desired. The river is navigable for the largest vessels with a depth of forty-five feet at the wharves. The Chesapeake and Ohio Canal has its terminus at Alexandria. Two turnpikes and several county roads lead into the District of Columbia across three fine bridges. The Virginia Midland, the Washington and Alexandria, the Alexandria and Fredericksburg, and the Washington, Ohio and Western railroads have terminal points in the city of Alexandria, and pass through the county in various directions.

The educational advantages of Alexandria are very great, some of the finest private schools in the country being located here; and the Theological Seminary of the Episcopal Church is just outside of the city limits.

The soil of this county is well suited for market gardens, and the proximity of Alexandria city and Washington give great advantages in this respect, and for dairy farming. Washington is rapidly becoming one of the greatest cities of the country, and lands in the vicinity are fast enhancing in value.

AMELIA

was formed in 1734 from Prince George. It lies on the south bank of Appomattox river, which separates it from Chesterfield, Powhatan and Cumberland counties, and, together with its numerous tributaries, affords ample drainage and extensive bottom lands. The county is thirty miles long and about ten miles in mean breadth, and contains 223,693 acres of land valued at \$907,975. Population 10,217. The upland is gently undulating; the soil varies from red clay to gray slate and sandy loam and produces good crops of tobacco, corn, wheat, oats, rye, grass, &c. Tobacco is the main money crop, and its production and curing are carried to great perfection by intelligent and careful planters.

"Flue-curing" has been practised here for four years past, and it has been found that bright tobacco of the finest quality can be produced in Amelia. Commercial fertilizers, especially raw phosphates, are reported to act well and prove very remunerative here; improved agricultural machinery is being introduced by enterprising farmers, and this bids fair to become again what it once was—one of the richest counties in the State, in proportion to population.

The Richmond & Danville railroad passes through the centre of the county, and the Norfolk & Western near its southeastern border. The Appomattox river on the northern edge is again opened for navigation, giving access to the markets of Petersburg.

The mineral wealth of this county is considerable. The following specimens are on exhibition at New Orleans:

The following specimens have been loaned by Prof. Wm. M. Fontaine, from his collection at the University of Virginia for the New Orleans Exposition:

1. *Potstone*, which is found in large quantities. Has been used for stove backs, in place of fire-brick, as it is a good material to resist heat. Was cut by the Indians into pots.

2. *Fragments of an old Indian pot*, cut from the above potstone.

3. *Zircon, Feldspar and Columbite*, from Mica mines of Amelia.

4. *Amazon Stone*, which occurs occasionally in the feldspar of the Amelia mica mines.

5. *Albite Feldspar*, from Amelia Mica mines.

6. Crystals of *Albite, Feldspar, Quartz and Mica*, from cavities in Amelia Mica mines.

7. *Orthoclase Feldspar*, from Amelia Mica mines; has been shipped for manufacture of porcelain.

8. *Albite Feldspar*, showing change of colors, from Amelia Mica mines.

9. *Beryl Crystal*, fragment of a large one, from Amelia Mica mines.

10. *Mica*, from Amelia Mica mines.

11. *Monazite*, from same.

12. *Albite Feldspar*, with *Spessartite Garnet*, from same.

The following from the Virginia Department of Agriculture:

13. *Mica*, from A. Rutherford owner of Amelia Mica mines.

14. *Mica*. Hall.

15. *Kaolin*, fine quality, from Amelia Mica mines.

16. *Quartz*, glassy, from same.

17. *Feldspar*, from same.

18. *Amazon Stone*, from same.

The following rare specimens from the above mines are loaned by Prof. W. M. Fontaine:

19. *Columbite Crystals*, a large mass.

20. *Microcline Crystals*, a large mass.

21. *Monazite*, a large crystalline mass.

22. *Monazite*, partly altered, a large crystalline mass.

23. *Microcline*, striated by overlapping plates of mica.

24. *Monazite*, aggregated crystals.

25. *Albite Feldspar*, crystals.

26. *Albite Feldspar, Spessartite and Helvite*.

27. *Allanite*, a variety of Orthite.

APPOMATTOX

was formed in 1845, from Buckingham, Prince Edward, Charlotte and Campbell counties. It is about 26 miles long and 18 miles in width, and contains 210,500 acres of land, valued at \$868,720. Population, 10,017. It lies on the south bank of James river, and is well watered by tributaries of that river, by the Appomattox, and some of the tributaries of Staunton river.

The surface is rolling, and in some parts hilly, but the many streams give a large proportion of bottom land. The soil varies from a stiff red clay to gray slate of a light and friable texture. The productions are tobacco, grain and grass. The timber is abundant and of valuable kinds, as oak, hickory, walnut, chestnut, maple, poplar, dogwood, &c.

The means of transportation to market are very good, and are afforded by the Norfolk and Western railroad passing through near the centre, and by the Richmond and Alleghany railroad, which skirts its northwestern border. This is a healthy and pleasant climate, where cheap and productive lands and pleasant surroundings furnish good inducements for new settlers.

The minerals of Appomattox are varied and valuable, to-wit: gold, iron, copper, manganese, steatite, mica, plumbago, asbestos, &c., and are represented in part at the

WORLD'S EXPOSITION AT NEW ORLEANS

by the following specimens :

1. *Limonite*, from Jones & Button's mine (Nuttall), one mile from Walker Ford Station, Richmond and Alleghany railroad.
2. *Margarite*, a form of mica, from Geo. P. Harner.
3. *Steatite*, from same.
4. *Magnetite*, from same.
5. *Limonite*, fibrous, from Wm. Drinkard, Stonewall creek, three miles from James river.
6. *Limonite*, from Thomas J. Straton.
7. *Gold bearing quartz*, from Geo. P. Harner.
8. *Specular Iron Ore*, from same.
9. *Manganese Ore*, from J. B. Moon.
10. *Specular Iron Ore*, from John J. Goff, Chestnut mountain.
11. *Limonite Iron Ore*, from E. M. Legrand, Chestnut mountain.
12. *Limestone*, from Mrs. Martha Walker, on James river.

The iron ores of Appomattox are almost unlimited in quantity, and are of immense value.

BRUNSWICK

was formed in 1721, from Surry and Isle of Wight. It is nearly a square of about 25 miles on a side, and contains 356,892 acres, assessed at \$1,150,143. Population, 16,790.

The surface of the county is undulating, and the lands are uncommonly well watered, having the Nottoway river on its north border, separating it from Dinwiddie and Nottoway counties, and the Meherrin and tributaries through the central parts; also by tributaries of the Roanoke in the southern sections. The soil is for the most part a sandy loam, easily worked, and very productive in wheat.

corn, cotton, peanuts, and tobacco. Gypsum is said to act well on these lands, and they are very responsive to commercial fertilizers. This county ranks third in the production of cotton—2,950 bales.

Many fine thoroughbred horses were formerly raised in Brunswick.

The climate is mild and healthy.

The line of the projected Richmond and North Carolina railroad has been surveyed through the heart of Brunswick, and will pass by Lawrenceville, the county seat, giving quick and easy transportation to market.

BUCKINGHAM

was formed in 1761 from Albemarle; is thirty-five miles long and twenty-four miles wide, and contains 354,163 acres of land, assessed at \$1,433,246. Population, 15,227.

It lies on the south bank of James river, which forms its boundary on two sides and for a distance of more than fifty miles. The broad bottom lands on this river are of unsurpassed fertility. Willis river, Slate river, and many smaller tributaries of the James water this county, and the Appomattox forms part of the south boundary.

The surface is rolling and hilly, with several small mountains, as Willis, Slate river, and Spears mountains. The soil varies from stiff red clay to a gray slaty texture, much of it very rich, but some poor chestnut ridges of considerable extent are found in parts. The Slate river lands are very fine, and comprise a considerable area.

The productions are tobacco, corn, wheat, oats, rye, and grass. There is much fine tobacco produced in this county, and the planters are careful handlers of it. New varieties are being tried, and an effort made to improve the old kinds.

The timber found here consists of oak, chestnut, pine, hickory, &c., and is abundant. This county is rich in minerals—iron, gold—of which many mines have been successfully worked for a great many years; barytes, slate, asbestos, mica and limestone. Slate of superior quality is mined near New Canton more extensively now than ever before, and is in great demand all over the country. To accommodate the demand for transportation of this slate, there has recently been built the Buckingham railroad, a branch from the Richmond and Alleghany railroad from Brems Bluff station across the James, on a new and substantial bridge, to the slate quarries. The construction of the railroad and bridge here mentioned, and of several bridges at other points, is due to the enlightened policy of the authorities of the Richmond Alleghany railroad, who are doing all in their power to develop the country through which it passes.

The following (somewhat abridged) was taken from one of the papers in 1880; the writer was assessor of lands in the county, and has no interest in the mines. Veins of gold, slate and iron enter the county just above New Canton, on James river, passing through the county. Slate is the leading vein, from a quarter to a half mile wide, inexhaustible as to quantity and most excellent in its character, and now largely worked.

The gold vein is from two to fifteen feet wide on the west, and iron on the east in the greatest abundance. * * * * *

After describing and locating eight mines which have been opened and worked, he adds, "I am anxious to see the great mineral resources of this county developed, which are equal, as I believe, to the fabulous wealth of the Black Hills, or California itself. Then let capitalists and mineralogists and geologists come and examine for themselves."

The celebrated Everman (Practical Mineralogy) says :

"We have here (in Virginia, &c.) a belt of gold of unparalleled extent, immense width and undoubtedly reaching to the primitive rock. * * * *

Here is a mass of precious metal enclosed in the rock which cannot be exhausted for ages ; and in this respect the region in question is the most important of all known deposits, California not excepted."—*The Virginias*.

Buckingham county is represented by the following

MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Roofing Slate*, from quarry of Edwards & Roberts, near New Canton.

2. *Steatite*, from two miles from mouth of Hardware river.

3. *Gold*, in quartz, from Morrow mine.

4. *Iron Ore*, from Bent Creek.

The following were collected by E. D. Fraser, Esq. :

5. *Kaolin*, from the land of M. C. Elcon.

6. Quartz, micaceous, from Willis Mountain.

7. *Gold*, in a molecular state, from land of T. H. Garnett, six miles south from the courthouse.

8. *Asbestos*, from Willis Mountain.

9. *Pyrite*, iron pyrites, from Willis Mountain.

10. Gold-bearing quartz, from "Morrow" mine.

11. *Magnetite*, magnetic iron ore, from land of Geo. H. Cox.

12. *Steatite*, from land of T. H. Garnett, Willis Mountain.

13. *Mineral*, from Willis Mountain.

14. *Cyanite*, from Willis Mountain.

15. *Schorl*, from Willis Mountain.

16. *Copper Ore*, from shaft 80 feet deep on Willis Mountain.

17. *Schorl*, &c., from Willis Mountain.

18. *Cyanite*, from Willis Mountain.

19. *Gneiss*, from Willis Mountain.

20. *Micaceous Sand Stone*, from Willis Mountain.

21. *Gneiss with Cyanite*, from Willis Mountain.

22. *Quartz*, from Willis Mountain.

23. *Mica*, from Willis Mountain ; surface indications abundant.

24. *Hematite Iron Ore*, from Willis Mountain, from land of T. H. Garnett.

25. *Quartz*, crystalline, from near Willis Mountain.

26. *Quartz*, crystalline, from west of Willis Mountain.

27. *Quartz*, from Willis Mountain.

28. *Quartz*, crystalline, Mrs. T. H. Garnett's, west of Willis Mountain.

29. *Mineral*, from Willis Mountain.

30. *Gneiss*, from Woodson Cave, Willis Mountain.

31. *Ochrous Clay*, Willis Mountain.

32. *Micaceous Rock*, from Willis Mountain.

33. *Quartz and Schorl*, Willis Mountain.

34. *Zircon*, Willis Mountain ; shows in great abundance.

35. *Garnets*, from Willis Mountain.

36. *Quartz*, crystalline, from Mrs. S. A. Hubbard's, three miles east of Willis Mountain.

37. *Schorl in quartz*, from John A. Scruggs', half a mile west from Willis Mountain.

38. *Magnetite*, from land of N. B. Shepard, four miles northeast from Willis Mountain; in large amount.

39. *Magnetite*, from land of P. A. Hubard, two and a half miles north from Willis Mountain.

40. *Kaolin*, from Mrs. S. A. Hubard, three miles east from Willis Mountain.

41. *Magnetite*, from land of Richard Davis, twelve miles east from Buckingham Courthouse.

42. Hematite Iron Ore, from Mrs. S. A. Hubard.

43. Mica in quartz, one-half miles west from Willis Mountain.

44. *Pyrite*, Iron Pyrites, from land of Mrs. S. A. Hubard, three miles east from Willis Mountain.

CAMPBELL

was formed in 1781 from Bedford. It is nearly a square of twenty-five miles to a side, and contains 337,216 acres of land, assessed at \$1,175,613, exclusive of Lynchburg. Population, including Lynchburg, 36,253.

It lies on the south bank of James river, by tributaries of which, and by Otter and Falling rivers and other tributaries of the Staunton, it is well watered. These streams give to it any quantity of water power for manufacturing purposes.

The James and Staunton rivers, the first emptying into Chesapeake bay, and the latter into the Roanoke, (which empties into the Albmarle Sound) afford water transportation for a portion of the productions of this county; but much the larger portion goes by railroads. The Virginia Midland R. R. traverses it from North to South; the Norfolk and Western runs through the northern section from east to west; and the Richmond and Alleghany on its north border, all combining to give this county peculiar advantages and facilities for markets in every direction.

The surface is rolling and hilly. The soil is fertile and particularly adapted to the production of the fine, high priced tobacco, as well as grain and grass. Land is valued at from four to twenty dollars per acre, and much of it is worth a great deal more. There is an abundance of timber of the usual growth of this section, a large part of the area being clothed with the original forest trees. Lynchburg, situated on the banks of James river, in the northern end of the county, is the fourth town in importance in the State, and contained in 1880 a population of 15,959, which has greatly increased since. The three railways which traverse this county cross each other here, making it a fine centre of trade. There are in Lynchburg eight banks and banking houses, four newspapers, four fine hotels, ten churches, many public and private schools, seventy tobacco factories, and in the suburbs two rolling mills, three foundries, two large flour mills, two bark and extract manufactories and numerous other enterprises.

The following is from a description furnished by H. T. Leman, former school superintendent:

"The formation of Campbell belongs to the azoic period, and is based on granite, syenite and gneiss. Some fine specimens of granite lie in the northeastern portion of the county, on James river, furnishing the finest building rock; but the larger portion found in the county is syenite, from some of which good millstones are made. Through the middle of the county, running from east to west, and about two miles in width, there is a vein of "new red sandstone" overlying the original formation. This is found in laminae from three to six inches thick, smooth surface, and is much used for building chimneys. The surface is

generally rugged. The ridges running through the county are high, in several instances reaching the dignity of mountains. The soil of the higher land is a light, thin, gravelly loam, not very productive of itself, but yielding good crops with a little aid from fertilizers. The finer kinds of tobacco, wheat, corn, oats and grass are the remunerative crops. A vein of some eight or ten thousand acres of red or chocolate land, extending northeast and southwest, furnishes a fine soil for wheat—equal to any in the State—and with the large area of alluvial bottom places it among the most productive of those east of the mountains.

The minerals consist of several varieties of iron ore, manganese and steatite. Some valuable mines have been worked for a good many years—those lying on Stonewall and Falling creeks furnishing from eighty to eighty-four per cent. of peroxide of iron. Ore is found almost everywhere in the county, but has been more particularly developed on the line of the Virginia Midland railroad, where large deposits of manganese have also been discovered. Some of the steatite is of beautiful texture, and makes handsome and durable backs and jams for fire places.

Timber is abundant and consists of hard yellow pine; white, black, red and chestnut oaks; poplar, locust, walnut, hickory, black gum, sweet gum, a magnificent tree, growing tall and straight, furnishing a fine lumber for cabinet work and hubs of wheels. The sour wood grows in great quantities on the ridges, does not attain much size and is only used for fire-wood, but twice a year ornaments the forest with its beautiful lily-like flowers, and furnishes the bee with its purest honey.

Campbell has the following

MINERALS ON EXHIBITION AT THE NEW ORLEANS EXPOSITION.

1. *Cyanite*, from J. J. Hardwicke, Lynch station, Virginia Midland Railroad.
2. *Iron Ore*, specular and magnetic, from mine near Lynch station.
3. *Magnetic Iron Ore*, from mines of E. S. Lee, Otter river station, Virginia Midland Railroad.
4. *Manganese*, from mines of H. Olivier, near same locality as above.
5. *Barytes*, from "Hewitt" mine, near above locality.
6. *Steatite*, from Mrs. C. Peerman's quarry, near same locality.
7. *Marble*, from J. M. Burruss, near same.
8. *Manganese*, from mine of M. L. Bishop, near Lynch station.
9. *Magnetic and Specular Iron Ore*, from last mentioned mine.

The following were collected by Mr. E. D. Frazer:

10. *Iron Ore*, magnetic, from "Rosenberger" mine.
11. *Iron Ore*, specular and magnetic, from B. S. Bernard's, near Lawyer's store.
12. *Iron Ore*, hematite, from "Mortimer" mine.
13. *Manganese*, from E. S. Moorman's, near Lawyer's.
14. *Manganese*, from "Carson" mine, four miles south from Lawyer's.
15. *Quartzite Marble*, from Lee mine.
16. *Quartzite Marble*, a slab, from Moon's quarry, on Lee mine.
17. *Barytes*, ground, grade number one, from mills of Tanner, Bliss & Co., Lynchburg.
18. *Barytes*, ground, grade number two, from same firm—the mineral was mined in Campbell county.

CHARLOTTE

was formed in 1785 from Lunenburg. This county has 301,417 acres of land, with an assessed value of \$1,599,533. The greater part of the county is watered by the Staunton and its tributaries, and some of the branches of the Meherrin have their sources in the eastern edge of Charlotte. There is much productive bottom land, and the soil is generally good, especially suited to fine tobacco as well as to cereals and grass. There was formerly much wealth in this county, and now its fine soil, abundant water-power, fine timber, and healthy climate make it very desirable as a residence. Many settlers from the North have located here and are pleased with the country. The market facilities are good, the Danville railroad passing through the county, and the Mecklenburg branch from Keysville through the eastern edge; and the Staunton river is navigable for batteaux all along the southern and western frontier of the county; \$5,000 per annum is being expended by the general government in extending and improving the navigation of this river, and a steamer will soon be running up to Cole's Ferry and as high as Brookneal.

Iron ore, copper, mica, and kaolin have been found in Charlotte.

CHESTERFIELD

was formed from Henrico in 1748. It is 28 miles long and 18 miles wide. The surface is rolling. The soil is in general light and gray in color, easily improved, and contains 293,142 acres, assessed at \$3,216,479. Population, 24,179. The James forms its northern and the Appomattox its southern boundary. There is much very rich alluvial land on these rivers.

The county is well watered and intersected by important railway lines.

The productions are wheat, corn, oats, hay, tobacco, and vegetables. Marl exists in the lower end of the county.

Chesterfield still contains a good amount of timber. The county is receiving a good number of immigrants. Its proximity to the market of Richmond and Petersburg give it great advantages.

This county has inexhaustible mines of bituminous coal, natural coke, and ochre, and extensive quarries of superior granite in active operation. Kaolin and ochre of the finest character have been discovered in this county.

Manchester, the principal town, has two cotton mills, several flouring mills, one paper mill, one bucket factory, iron works, the machine shops of the Richmond and Danville railroad, and several other manufactories, and is connected with Richmond by five bridges across the James. The coal of Chesterfield is celebrated as a very rich gas coal; the principal mines are the Midlothian, *Brighthope, Black Heath and Winterpock. The Richmond and Danville railroad and the Richmond and Petersburg railroad cross the James at Manchester on two fine bridges, and pass south through this county, and railways from the coal mines in the western part of the county run eastwardly, intersecting the main lines, and bring their products to the James river, below Manchester, and to the Appomattox, below Petersburg, at points of shipment; also to Bermuda Hundred, near the junction of James and Appomattox rivers.

*The Brighthope has a railroad from the mines to James river, twenty-one miles, crossing Richmond and Petersburg railroad at Chester, connecting with Richmond and Petersburg and at Osborne, on the river, large-sized vessels take on this coal for foreign markets.

The remains of an iron furnace are found in this county, five or six miles below Richmond, described by Berkeley in his History of Virginia as being worked in 1620. It was broken up by the massacre of Opecancanough in 1622.

Ochre of good quality is largely mined on the Appomattox river.

CHESTERFIELD MINERALS AT NEW ORLEANS EXPOSITION.

1. *Bituminous Coal*, from Brighthope Ry. Co.'s mines, from beds 25 ft. thick.
2. *Glass Sand*, from Bermuda, near James river, very fine quality.
3. *Bituminous Coal*, from "Etna" mine, near Coalfield station, R. & D. R. R.
4. *Carbonite, Natural Coke*, from "Eureka" coke mine, near same place.
5. *Crude Yellow Ochre*, from mines of Bermuda Ochre Co.
6. *Manufactured Yellow Ochre*, from above, considered by manufacturers equal to best French.
7. *Iron Ore*, hematite, from 3 to 4 thick above beds from which above ochre is obtained makes good metallic paint—probably the ore used in the first iron works built in America.
8. *Granite* from Old Dominion Granite Co.'s quarries on James river.

CUMBERLAND

was formed in 1748 from Goochland. It is 32 miles long and about ten broad, with the Appomattox river running on its south, the James on its north boundary, and Willis' river through its western part; the Norfolk and Western railroad runs through a portion of its southern border.

The surface is undulating and the soil productive.

Population, 10,540.

Number of acres of land, 190,749, assessed at \$1,039,630.

The products are tobacco, wheat, corn and oats. The cultivated grasses, particularly clover, succeed admirably on improved lands.

The soil is very good, with generally a red clay sub-soil, and is capable of being made very productive. The lands on the rivers are very fertile. No county in the State, probably, is more healthy than this, and the inhabitants have every reason to be satisfied with their homes, and persons seeking new homes will find many inducements here.

Cartersville, on the James, is the principal village, and much of the produce of the county is shipped from this point by the Richmond and Alleghany railroad, which runs on the north border of this county, on the opposite side of the river. A substantial bridge across the river at Cartersville places the farmers of the northern end of the county in easy reach of the railroad.

Coal is found in the county, but it is only fit for furnaces and blacksmith's use.

A most remarkable cluster of mineral springs has been discovered in this county within a third of a mile from the town of Farmville. There are lithia, sulphur, chalybeate, and magnesian waters flowing from the earth within a few yards of each other—a wonderful and beneficent freak of Nature.

CUMBERLAND MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Iron Ore*, lean, from Lyon A. Agee.
2. *Iron Ore*, from Dr. J. M. Blanton, Farmville.
3. *Magnetite*, from Col. J. C. Wood, near Ca Ira.
4. *Lignite*, from Dr. J. M. Blanton, Farmville.

DINWIDDIE

was formed in 1752 from Prince George. The surface is in some part, undulating, but mostly level. The soil of the undulating portion is light clay loam, susceptible of the highest state of improvement. The Appomattox on the north boundary, and the Nottoway on the south, with their tributaries, give ample drainage to the county, with fertile bottoms.

Population, Petersburg included, in 1880, 35,293; number of acres of land, 327,516, assessed at \$1,063,103, exclusive of the city. The productions are corn, wheat, tobacco, cotton, oats, peanuts, potatoes, melons and vegetables of almost every variety for the Petersburg and other markets. Commercial manures are largely used. There is marl in the northeastern portion of the county, which is used to some extent, with very beneficial effects. All varieties of clover and grass, flourish well on the enriched lots and on the bottom lands. There is a large area in timber, consisting of oak, hickory, dogwood, walnut, ash, persimmon, elm, poplar and pine, original and second growth.

At Mayfield, in this county, there is an immense quantity of *granite*, said to be of the best quality and susceptible of the finest polish.

These quarries have been worked for the last fifty years. Granite of fine quality is also found on the Booth farm, immediately on the line of the Norfolk and Western railroad.

Several veins of hematite, and one of magnetic iron ore crop, out in different portions of the county.

Petersburg, in this county, is an important railroad centre and a large cotton and tobacco market, and has many tobacco factories. This city had a population of 21,664, in 1880, and the number has greatly increased since. The Central Lunatic Asylum, for colored lunatics, newly built, is near Petersburg.

The Norfolk and Western railroad, from Norfolk to Bristol-Goodson, passes through the city, and has extensive depots and machine shops, and a branch road to City Point, on the James. The Petersburg and Weldon, and the Richmond and Petersburg roads have terminal points with depots and machine shops here. The Richmond and Carolina railroad will pass through Petersburg and the centre of this county and Brunswick, and intersect the Raleigh and Gaston railroad in North Carolina. Work on this railroad has been commenced. The Appomattox river is navigable to Petersburg for steamers, and furnishes valuable water-power for the various manufactories adjacent to the city.

FAIRFAX

was formed in 1742 from Prince William. It lies on the Potomac river, and adjoins Alexandria county. The county is watered by the Potomac and the Occoquan, and their tributaries.

The surface is generally rolling, and the soil is a sandy and clay loam, and in some parts very fertile.

- The population is 16,037.

Number of acres of land, 252,082, assessed at \$2,368,201.

The productions largely exceed the consumption of the citizens, and consist, principally, of corn, wheat, oats, rye, hay, fruits, dairy products, and vegetables. Its proximity to Washington city, Georgetown, and Alexandria, ensures a ready demand for all the productions of the farm, dairy, and garden.

The land is mostly owned in small farms and is in a high state of cultivation.

Many families from the northern and western States have settled in this county since the war.

Artificial manures, lime, and gypsum, are in general use. Much of the soil is well-adapted to grass.

Bees, sheep, and poultry, are reported to be profitable.

There are 30 vineyards, embracing 100 acres.

The courthouse is situated near the centre of the county, and is a thriving village. It was nearly destroyed by the ravages of the late war, but has long since recovered from that disaster.

Mount Vernon, the home of Washington, is situated in this county, on the banks of the Potomac river, eight miles below Alexandria. The grounds are in charge of the Mount Vernon Association, and are visited every year by thousands of persons from all parts of the world.

Soapstone, asbestos, copper, and iron, are found in Fairfax. The Theodora Copper Mine is in this county.

The transportation facilities of this county are unsurpassed. It is traversed by three railways, the "Alexandria and Fredericksburg," the "Virginia Midland," and the "Washington, Ohio and Western"; and the Potomac river, which bounds two of its sides, is navigable for large vessels as far as Washington.

On the Potomac are many valuable fisheries, from which shad, herring, and other fish are caught in great numbers.

The dairy business is conducted on an extensive scale. The production of milk for the supply of the cities of Washington and Georgetown amounts to over 2,000 gallons daily. There are also several butter and cheese factories.

The wheat crop of this county has also increased immensely. Where, a few years since, two threshers with horse-power did all the work, from farm to farm, there are now six steam-power threshers employed. Improved self-binder harvesters are in use.

Great quantities of ship-timber, and poplar for paper pulp, have been shipped from the county.

Farmers are prosperous, and settlers are adding steadily to the population.

FAIRFAX COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Soapstone*, from Edward Fitzhugh.
2. *Iron Ore*, from J. J. Ratchford, Vienna.
3. *Potter's Clay*, from Edward Fitzhugh.
4. *Coal*, Jura-Trias.
5. *Lignite*, Jura-Trias; Vienna.
6. *Mica-schist*.
7. *Kaolin*, Edward Fitzhugh.
8. *Steatite*, cut into form of Bible, from Sykes property, near great falls of Potomac.

FLUVANNA

lies on the north bank of James river, and on the western edge of the Middle Division. Albemarle bounds it on the west, Louisa on the north and Goochland on the east. The Rivanna river, flowing from Albemarle and Greene counties, enters Fluvanna near the northwest corner and falls into the James at the southeastern angle of the county, where the thriving town of Columbia is situated. Hardware

river flows through the southwestern limits of the county and Byrd creek through the eastern. These large tributaries of the James, and many smaller streams, abundantly water the county, and greatly enhance its agricultural advantages.

Fluvanna contains 179,912 acres of land, assessed at \$853,228.* Population, 10,802.

The productions of this county are those common to this part of the Middle Division—wheat, corn, oats, rye, grass, and tobacco. For the last-named crop, it has a special reputation, the "sun-cured" of Fluvanna having been renowned for several generations. The system of flue-curing has recently been introduced very successfully.

This was formerly one of the best timbered counties in Virginia, and much good timber yet remains in some sections—pine, oak, poplar, ash, walnut and hickory.

The mineral wealth of this county is very considerable. The great gold belt passes through, and much gold has been taken from different mines. The "Telurium" is the oldest gold mine in Virginia, and the ore of this and other mines is, in places, very rich.

Iron ore, magnetic and brown hematite, has been found, and good specimens of copper ore, in the neighborhood of Palmyra, the county seat.

The Richmond and Alleghany railroad, passing through the southern border of Fluvanna, gives early and quick communication with Richmond. To the central parts of the county the Rivanna canal and slackwater navigation in the Rivanna river afford facilities for shipping produce to Columbia, where it is taken by the railroad. Altogether, this region offers many attractions to settlers—cheap and productive lands, pleasant and salubrious climate, accessibility to market, and a moral and law-abiding population.

FLUVANNA COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Gold*, in sulphurets of iron and copper, from Wm. F. Kirtley, Belzora mine.
2. *Magnetic Iron Ore*, from L. R. Payne, of Palmyra.
3. *Gold bearing Quartz*, from lands of Eugene Payne, thirteen miles north from Columbia.

GOOCHLAND

was formed in 1727 from Henrico. It is 34 miles long and about eight miles wide. It lies on the north bank of the James river, in its entire length. The surface is undulating. The soil on the river and creeks is very rich; on the ridges not so good, but is easily improved and then very productive. It produces large crops of tobacco, corn, wheat, oats and hay. As fine timothy meadows can be shown in Goochland as are in the United States.

The population is 10,307. Number of acres of land, 180,192, assessed at \$1,345,167.

Good land can be bought for \$12; on the ridges, from \$2 to \$5. The Richmond and Alleghany railroad, running through its length, 42 miles by the windings of James river, furnishes transportation for the farm products. The health of the county is excellent. It is drained by several large and many smaller creeks, which empty into the James.

*The assessed value of the 179,912 acres of land was in 1880 \$1,237,930. The figures given above (\$853,228) show a reduction so great and valuation so far below that of the lands of an adjoining county which is apparently no better and which is no more prosperous—i. e., Goochland—that I can hardly refrain from suspecting that a clerical error has crept in.—*Commissioner of Agriculture.*

In this county are found gold, iron ore, copper and coal. There are seven gold mines and two coal mines in the county. The soil is a gray or chocolate loam, resting on a tenacious red clay subsoil, and is noted for its large and excellent crops of wheat. Many Northern men have purchased lands and settled in this county, and are well pleased with it. Besides gold, iron and coal, several other minerals are found here, as granite, plumbago and asbestos. The county seat, near the centre of the county, is 30 miles from Richmond, and is a thriving village.

GOOCHLAND COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

Furnished by Charles Willard, Superintendent, from eight veins on lands of Tagus Mill and Mining Co.

Gold Ores from "Hurse Vein," 16 inch thick, and assays from \$28 to \$40 per ton.

1. Specimens of outcrop.
2. Specimens from water level, 14 feet deep.

From Mary Vein.

3. Specimen of outcrop.
4. Specimen open cut near surface—assays, \$14.
5. Specimen from open cut 8' deep—assays, \$10; vein 12" thick.

From Oak Hill Vein.

6. Specimen from 4' vein above water level.
7. Specimen from water level.
8. Specimen from below water level—yield \$10; 6' to 12' thick.

{ From Oak Hill Tunnel.

9. Sample of hanging wall 18" thick.
10. Section of vein next below 9.
11. Section of vein next below 10.
12. Section of vein next below 11.
13. Bottom of vein below 12.
14. Piece of boulder weighing 40 lbs. in a brown gravel vein under 13.

The Young Shaft.

15. Laminated rock, from 70' below surface, from hanging wall of ledge 1,600 wide.
16. Layer of slate 6" between 15.
17. From 10" quartz vein in 16.

The Fisher Vein.

18. Surface croppings.
19. From water level 14' down.
20. From bottom of vein, vein 20" thick, close to above foot wall—assays \$14 to \$20.

West Vein in Gilmore Mine.

21. From 10' cut.
22. From 10' cut.

The Main Vein.

23. From croppings on top of hill.
24. From 20' deep—assay from \$24 to \$42.
25. From 30' deep—assay from \$24 to \$42.
26. From 40' deep.
27. From 50' deep—assay from \$40 to \$75.
28. } From 60' deep. If concentrated and roasted will assay \$150 to \$200 gold,
29. } and about \$9 silver.
30. Sample of choice croppings, found everywhere along the course of veins.
31. Gold in sulphurets of iron and copper, from Wm. F. Kirtley, "Belzora" mine.
32. Gold-bearing quartz; "Fisher" mine.
33. *Talc*, *mica* and *plumbago*, from line of R. & A. R. R.

GREENSVILLE

was formed in 1780 from Brunswick. It lies on the North Carolina line, and is one of the cotton and peanut producing counties.

The surface is level or gently rolling; the soil mostly a sandy loam, easily tilled and freely responding to ameliorating culture. The Nottoway river, on its north line, and Meherrin, which flows through its central parts, with their numerous affluents, drain its surface and furnish ample water-power and abundant supplies of fish.

The productions are varied and valuable, and include tobacco, corn, wheat, oats, cotton and peanuts. There are some stiff clay soils well-suited to wheat. Lands are cheap, and the people kind and hospitable. The climate and health are all that could be desired.

The transportation facilities are very good, and are furnished by the Petersburg and Weldon railroad, which traverses its greatest length near the middle, and by the Seaboard and Roanoke railroad, which is near its southeast corner. Two other railroads have been projected, which will greatly add to the commercial advantages of this and the adjoining counties. The Atlantic, Danville and Western road is already completed from Claremont, the deep-water terminus of this road, on the James river, in Surry county, to Hicksford, the county-seat of Greenville.

Population, 8,140; area, 186,290 acres; assessed at \$597,526, a fraction over \$3 per acre.

Many immigrants have settled here since the war, mostly from the Northern States and from Great Britain. The timber of this county is abundant and very valuable, and consists mainly of white oak, ash and pine. There is a tram road, nine miles long, on which steam-cars are run, leading from the Petersburg railroad to a very fine body of white oak timber.

Marl is found in this county.

HALIFAX

was formed in 1752 from Lunenburg. It is one of the largest and wealthiest counties in the State. It borders on the North Carolina line, with Pittsylvania on west and Mecklenburg on the east. It lies in the heart of the finest tobacco growing section of the State, and its production of tobacco, wheat, corn and oats aggregates a very large amount. This county is remarkably well watered, the Staunton river skirting its entire northern and northwestern boundaries, with numerous tributaries penetrating the county, while the Dan, Hyco and Banister rivers penetrate the interior. The soil on these streams is of great fertility, producing large crops of grain year after year without rest or fertilizer. Much wealth and refinement exist here, though the wealthiest families lost very heavily by the late war, as they did in all parts of the State; but this county was very largely slave-holding. The population is 33,569. Acres of land, 518,514, assessed at \$2,907,637. While not generally regarded as strictly a grass country, all the grasses do well on good land. Sheep raising is largely carried on with very handsome profit. The Richmond and Danville railroad traverses this county from northeast to southwest, by which route the county seat is 115 miles distant from Richmond. The town of South Boston, on the Richmond and Danville road, at one of the points where this road touches the Dan river, is rapidly growing in importance as a tobacco centre—building up a flourishing trade. The Lynchburg and North Carolina railroad, recently chartered, will traverse the county from north to south; when built, the county will have ample facilities for market in all its parts. Iron, copper, plumbago, manganese and mica are found in the county; and valuable lithia water is found at "Wolf Trap," on the Richmond and Danville road, and exported to all parts of the country.

HALIFAX COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

From the Virginia Department of Agriculture.

1. *Cinder*, from ancient furnace near Scottsburg.
2. *Magnetite*, from John M. Jordan.
3. *Corundum*, (?) from D. A. Claiborne.
4. *Steatite and Clay*, from Wolf Trap—H. Blair.
5. *Light Sandstone*, from same as above.
6. *Magnetite and Specular Iron Ore*, from J. M. Jordan.

LOUISA

was formed from Hanover in 1742. It is 30 miles long and about 18 miles wide, and contains 316,193 acres of land, valued at \$1,737,680, and a population of 18,845. North Anna river forms its northern boundary, separating it from Spotylvania. The South Anna drains its central parts, and these with their tributaries furnish much valuable bottom land and numerous sites for mills with abundant water-power.

The surface is gently undulating, and the soil in most parts of an excellent quality. In the western part of this county is a remarkably productive district of land called "Green Springs," supposed to be the bed of an ancient lake. The main crops of the country are corn, wheat, oats and tobacco, the

last the main money crop, and being well handled, usually brings very good prices.

Transportation to market is furnished by the Chesapeake and Ohio railroad, which traverses it from east to west, and the Virginia Midland railroad skirting the western end.

The county is rich in minerals. Gold, silver, copper, iron, lead, manganese, kaolin, and plumbago, all are found here. The inexhaustible deposits of copper and iron pyrites will one day be immensely valuable. Very soon they will be largely utilized in the manufacture of sulphuric acid with the metal as a by-product. These rich deposits are found on the edge of the gold belt, near Tolarsville, on the Chesapeake and Ohio railroad, and a branch road will soon be constructed to the mines.

Timber of the usual varieties found in Middle Virginia is abundant in Louisa.

LOUISA COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

The following valuable contributions, six boxes full, are from the "Arminius Copper Mine," east from Tolersville Station, Chesapeake and Ohio Railway, contributed by W. H. Adams, engineer and mine-manager:

1. *Granular Pyrites*, from surface of vein; contains about 50 per cent. of sulphur.
2. *Granular Pyrites*, from principal vein; sulphur, 49.57; iron, 43.62; copper, 1.50.
3. *Iron Pyrites*, containing gold, silver, &c.
4. *Iron Pyrites*, containing copper, gold, and silver.
5. *Iron Pyrites*, containing copper. Analysis gives copper, 3. to 12.; iron, 38. to 43.; sulphur, 34. to 42.
6. *Massive Iron Pyrites*, containing zinc.
7. *Black Oxides of Copper*, "fines"; copper, 4. to 20.; sulphur, 20. to 32.; iron, 20. to 28.
8. *Massive Hard-White Iron Pyrites*; sulphur, 51.649; iron, 46.870.
9. *Granular White Iron Pyrites*; sulphur, 51.30; iron, 47.60.
10. *Pyrrhotite and Chalcopyrite*; copper, 4.207; iron, 45.; sulphur, 39.
11. *White Iron Pyrites*; millions of tons of ore carrying above 30 per cent. of sulphur and rich in copper and iron are here exposed on line of pits for nearly a mile in a northeast and southwest direction—much of it contains from 50 to 52 per cent. of sulphur.
12. *Garnet Slate and Garnets in place*, from main Pyrites vein in No. 3 shaft.
13. *Garnets and Magnetite*, crystals in place, from No. 1 shaft, 125' from surface.
14. *Manganiferous Iron Ore*, from a prospecting hole.
15. *Iron Ore, Hematite*, from surface of pyrites veins of "Arminius" and "Sulphur Mines" Companies properties. These ores have been largely used in Victoria furnace.
16. *Gold*, in sulphurets of iron and copper, from Wm. F. Kirtley, Esq.

The following from Prof. Fontaine:

17. *Gneiss*, in large quantities, at Holliday's mill on North Anna river.
18. *Itacolumite*, from the "gold belt," near Tolersville, a little east from the pyrites.
19. *Specular Iron Ore*, from "Green Springs" neighborhood; not seen in place.

From the Virginia Department of Agriculture.

20. *Red Hematite Iron Ore*, from J. F. Jordan, from old Victoria Furnace.
21. *Micaceous Iron Ore*, from "Davis" Mine, near Tolarsville.
22. *Iron Ore*, from R. M. Kent, Louisa Courthouse.
23. *Gold-Bearing Quartz*, from "Walton" mine.
24. *Manganese*, from J. B. Jenkins, Victoria furnace.
25. *Black-Jack Iron Ore*, from J. F. Jordan, Victoria furnace.
26. *Graphite*, from Mr. Powell.
27. *Gold-Bearing Quartz*, said to contain \$2,000 to the ton, from J. B. Jenkins.
28. *Magnetic Iron Ore*.

LUNENBURG

was formed in 1746 from Brunswick. It is 30 miles long in its greatest length, and has an average width of about 15 miles. It contains 270,000 acres of land, valued at \$700,000, and a population of 11,484. The surface is level, or gently undulating; the soil a grayish slate or of sandy texture, easily tilled, and producing good crops. It lies between Nottoway and Meherrin rivers, the first forming most of the northern border, and the latter separating it from Mecklenburg on the south. The numerous tributaries of these rivers permeate the county in all parts and afford many eligible locations for mill sites.

The productions are tobacco, wheat, corn, oats, cotton, and grass.

This county abounds in good timber of white and other oaks, pine, hickory, walnut, and maple. No valuable minerals have been developed in this county, but there are on exhibition at the New Orleans Exposition samples of glass sand, quartz and pyrite.

The transportation facilities of this county are not very good. The Richmond and Danville railroad passes along the northwest border, and the Richmond and Mecklenburg railroad on the west line. The Richmond and Carolina railroad as projected will pass near the southeast corner, but there is no railroad running through the interior.

This is a healthy region and well adapted to fruits and the vine. The society is excellent, and the lands can be bought at a very low price.

MECKLENBURG.

was formed 1764 from Lunenburg. It is thirty-six miles long and has an average width of about eighteen miles. It contains 417,661 acres, valued at \$1,650,000. Population, 24,680. It is watered by Meherrin river, which separates it on the north from Lunenburg, by the Roanoke, which runs from west to east through the southern portions, and by numerous tributaries of these rivers. The Dan and Staunton unite in this county and form the Roanoke. Upon these fine rivers there is a very large extent of rich bottom land—few counties in the State have more.

The productions are tobacco, corn, wheat, oats and some cotton. About one half of the county is in timber, consisting of all the oaks, poplar, ash, hickory, beech, birch, pine, gum, dogwood, &c. Fruits succeed well, there being eight to ten thousand acres in apples, peaches, pears, cherries, quinces, plums and apricots and a considerable amount in grapes.

The health of this county is excellent and the society good. Many immigrants have adopted this as their home, and there is room and inducements for many

more. "Chase City," founded by English immigrants, is a flourishing colony, and the people are anxious to secure more of such a desirable class of settlers. The Buffalo Lithia Springs in this county have a world wide reputation as furnishing a mineral water of value in the treatment of dyspepsia, rheumatism and diseases of the urinary organs; and at Chase City a mineral water has been discovered which may prove very valuable.

This county has been greatly benefited by the completion of the Richmond and Mecklenburg railroad from Keysville, on the Richmond and Danville railroad to Clarksville, nearly across the western end of the county. The completion of the Richmond and Carolina railroad will have a like effect in the eastern part; and the Atlantic, Danville and Western narrow gauge road which has already reached Hicksford, in Greenville, will pass through Mecklenburg, from east to west.

NOTTOWAY

was formed in 1788 from Amelia. It is 20 miles long by about 12 miles in width, and contains 196,300 acres of land, valued at \$861,169. Population, 11,319. This was formerly a very wealthy county, and contained a larger proportion of blacks than any other in the State—about five-sevenths of the whole, or two and a-half blacks to one white. Consequently there has been a great shrinkage of value in real estate, and there is an excellent chance to buy fine lands in this and other counties of the "black belt" at a low price. It is watered by Nottoway and Little Nottoway rivers and by some of the tributaries of the Appomattox.

The principal crops are tobacco, wheat, corn, and oats. The tobacco of this county is noted for its excellent quality. The timbers consist mostly of oak, pine, hickory, maple, walnut, beech, poplar, ash, gum, cedar, dogwood. Mica, steatite, kaolin, and granite are found in this county, but have not as yet been developed.

Blacks and Whites is the largest village in the county. Beginning at the close of war with one shanty for a storehouse, it now has over twenty stores and shops, one bank, one fertilizer factory, one bark, sumac, and grist-mill, one tobacco factory, two tobacco warehouses, three churches, public school building, &c. It ships more produce on the Norfolk and Western railroad than any station between Petersburg and Lynchburg.

Burkeville is a thriving village, located in the western part at the intersection of the Norfolk and Western, and the Richmond and Danville railroads. These two railways, entering the county at different points, one on the western and the other on the northern borders, afford convenient transportation to most of its territory. This, with the other counties of Middle Virginia, constitute probably the healthiest region of the State, and the people are kind and hospitable and ready to welcome new settlers among them.

NOTTOWAY COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Collection of Virginia Department of Agriculture.

1. *Steatite*, from Court House; J. R. Tuggle.
2. *Kaolin*, from Blacks and Whites; C. Hadder.
3. *Fine Granite*, near Burkeville, used when railroads were built.

PITTSYLVANIA

was formed from Halifax in 1767. It is thirty-five miles long and about twenty-six wide, and is the third county in area in the State. It contains 618,267 acres, valued at \$3,460,651. Population, including the city of Danville, 53,031. It is bounded on the north by Staunton river and has Banister, Dan and Hyco rivers through the central and southern parts. These rivers and their tributary streams afford ample drainage, water power, and much fertile bottom land. The surface is rolling and hilly, with some low mountains. The soil is light gray, and gravelly on the hills, while the low lands along the streams vary from stiff red to a light, friable, sandy texture, and are very fertile. Tobacco, corn, wheat, oats, rye and the grasses are the chief farm products; the tobacco raised in Pittsylvania is largely of the bright, high priced kind, and is the main money crop.

Danville is one of the chief tobacco marts of the State, and is a growing city, with many large manufacturing industries, and an important railroad centre. It is located on Dan river, near the southern end of the county, and is the terminus of four railroads.

All parts of this county have convenient access to market by railroads crossing its territory. The Richmond and Danville enters from its eastern border, the Virginia Midland from the north traversing its greatest length, and the Danville and New rivers from the western line, all centre in the town of Danville. The Pittsylvania and Franklin railroad from Rocky Mount to Ward's Springs, on the line of the Midland railroad, taps a fine agricultural and mineral region in the north west part of the county.

The mineral wealth of this county is very great, and is illustrated in part at the World's Industrial and Cotton Centennial Exposition by the following specimens:

From Va. Midland Railway exhibit.

1. *Iron Ore*, from Pittsville, contributed by Hood, of Pittsylvania Steel Company.
2. *Barytes*, from "Bennett" Mine, Pittsville.
3. *Barytes*, from "Parker" Mines, Pittsville.
4. *Barytes*, from "Thompson" Mines, two miles from Pittsville.
5. *Kaolin*, from Railway Company's land, Motley Station.
6. *Iron Ore*, from Henderson & Bond, one half mile from Motley.
7. *Asbestos*, from Railway Company's land, Pittsville.
8. *Gray Granite*, from Broom, one and a half miles from Dry Fork Station.

From Virginia Department of Agriculture.

1. *Asbestos*, from Walker Church.
2. *Red Oxide of Iron and Manganese*, from N. W. Cobb, Calland's.
3. Marble, from John L. Hurt.

Collected by E. D. Frazer.

4. *Manganese*, from Mrs. P. Snow, two miles north from Motley Station, Va. Midland railroad; probably a large deposit.

5. *Limonite*, Brown Iron Ore, from Bond & Henderson's Mine, one-half mile west from Motley Station.
6. *Magnetic Iron Ore*, from Pittsview Mine.
7. *Barytes*, from mine of Pittsylvania Mining and Milling Company.
8. *Barytes*, from mine of Tanner & Bliss, Pittsview.
9. *Manganese*, from mine near Pittsview.
10. *Barytes*, from "Hamner" Mine.

POWHATAN

was formed in 1777 from Cumberland county. It is 25 miles long and about 15 miles wide, and contains 160,503 acres of land, valued at \$1,173,450; population, 7,848. It has James river for its north and Appomattox river for its south boundary, giving extended water lines and marginal bottom lands of great fertility.

The surface off from the streams is gently undulating, and the soil mostly gray and of a light friable texture, with some stiff clays. The productions are tobacco, corn, wheat, oats and hay, tobacco being the principal money crop. Fruits and the vine succeed well in this county. No section of the State is healthier than this. It is above malarial influences and below the cold and damp of higher attitudes. It is an excellent part of the State to live in, and immigrants will find cheap land, good homes, and an intelligent, hospitable people, with churches and schools convenient.

Coal, mica, kaolin, iron ore, and graphite are found in Powhatan, some specimens of which were exhibited at the World's Exposition at New Orleans, as follows:

1. *Bituminous Coal*, from Norwood mine, Charles R. Kennon.
2. *Graphite*, Dr. W. H. Carhart, from collection of Virginia Department of Agriculture.
3. *Feldspathic Gneiss*, from same as above.
4. *Kaolin*, Dr. W. H. Carhart, from same as above.
5. *Iron Ore and Titanium*, from Mr. Leake, collection of Virginia Department of Agriculture.

PRINCE EDWARD

was formed in 1753 from Amelia. It is twenty-five miles long and about twelve miles wide, and contains 222,071 acres, valued at \$2,061,008. Population, 14,794.

Appomattox river separates it from Cumberland and Buckingham, and with its tributaries furnishes ample drainage. The surface of this county is similar to those which adjoin it, being of a gently undulating character, with good bottom lands on the streams.

The soil is mostly formed from granitic or gneissoid rock, and is productive and easily improved. The productions are tobacco, wheat, corn oats and hay. This is a good tobacco county and produces an article of fine quality. Farmville, in the northern part of the county, is a thriving town, and a place of considerable importance as a tobacco manufacturing centre, being the fifth largest in the State. Near that place are found mineral waters containing a good proportion of lithia (see Cumberland county). Hampden Sidney College and the Union Theological Seminary are located near Farmville.

Transportation facilities are convenient to all parts of the county, and are afforded by the Norfolk and Western railroad passing through the northern portions, and the Richmond and Danville railroad in the southern parts.

The minerals consist of iron, copper, mica, kaolin and some coal, but have not been developed. The following specimens were on exhibition at the World's Industrial and Cotton Centennial at New Orleans, La.

1. *Fire Clay*, from land of Wm. T. Barrett, collected by Prof. W. H. Seamon.
2. *Bornite and Malachite Copper Ores*.

From Virginia Department of Agriculture.

3. *Copper Ore*.
4. *Quartz, Fluorspar and Pyrite*, from L. R. Howlett, Green Bay.
5. *Kaolin Balls*, three, from four miles of Prospect station, from G. W. Bell.
6. *Mica*, from R. B. Wilson, Green Bay.
7. *Greenstone*.

PRINCE WILLIAM

was formed in 1730, from Stafford and King George. It lies on the Potomac river with Fairfax on the north, Loudon and Fauquier on the west, and Stafford on the south. The surface is rolling and well watered. The soil is generally good; and there are some fine farms. The productions are wheat, corn, oats, rye and grass in the western and middle, and trucking in the eastern portions. The timber consists of oak, pine, chestnut, hickory, and other woods. The population is 9,804. It has 221,442 acres of land, assessed at \$2,356,123. The Virginia Midland railroad traverses it in a southwest course, and the Manassas Division to Strasburg penetrates the western part, while the Alexandria and Fredericksburg railroad runs through the eastern portion. The Potomac river furnishes water transportation, and fine fishing shores. Occoquan river, forming part of its north boundary, drains most of the middle and western parts. Gold, copper, barytes, slate, soapstone, brownstone, marble and limestone, are found in this county. This county is represented at the World's Cotton Exposition, New Orleans, by the following specimens of minerals:

From Virginia Midland Railway Company's exhibit.

1. *Glass-sand*, from Broad Run Station, from J. O. Blythe.
2. *Brownstone*, a block from Lynch's quarry, two miles from Manassas.
3. *Brownstone*, a block from quarry of Mayfield Brownstone Company near Manassas.

From Prof. Fontaine.

1. *Lignite*, from Neabsco creek on Telegraph road.
2. *Silicified Wood*, from same locality as above.

SPOTSYLVANIA

was formed in 1720 from Essex, King William, and King and Queen counties. It is 23 by 17 miles in extent, and contains 245,905 acres of land, assessed at \$1,288,762, and a population of 14,537.

The surface is mostly undulating, with much fertile bottom land on the numerous streams which form its drainage system. It lies between the Rappahannock and North Anna rivers, which form respectively its north and south borders. The interior is watered by the numerous tributaries of these rivers and of the Mattaponi. The wide bottom lands on these streams are famous for fine crops of corn,

melons, and vegetables. The soil of this county varies greatly, much of the upland being of tenacious clay, while that of the bottoms is mostly of a light, sandy texture.

The productions, besides those mentioned above, are wheat, oats, rye, and grass. Large quantities of poultry, vegetables and fruits are sold in the Fredericksburg and other markets.

Fredericksburg is the principal city, and is one of the oldest in the State. It has a population of 4,970, and is located on the south bank of Rappahannock river at the head of navigation, with lines of steamers to Chesapeake bay and Northern cities.

Besides water transportation, this county has two railway lines, the Richmond, Fredericksburg and Potomac railroad, and the Orange and Fredericksburg Narrow-Gauge railway to Orange Courthouse, where it connects with the Virginia Midland.

Gold, iron, granite, and sandstone are found in Spotsylvania.

The oldest furnace in America of which we have any certain knowledge was "Spotswood," in this county, described by Col. Byrd in the "Westover Manuscript" a century and a half ago.

SPOTSYLVANIA COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Iron Ore.*
2. *Decomposed Pyrite*, from Va. Department Agriculture.

The following were collected by E. D. Frazier, Esq.

3. *Blue Granite*, from falls of Rappahannock, one mile northwest from Fredericksburg.
4. *Gray Granite*, from Mrs. Downman's quarry, one mile west from Fredericksburg.
5. *Sandstone*, from quarry of D. E. Fleming at Fredericksburg.
6. *Sulphurets*, gold-bearing, from Greenwood Gold Mine.
7. *Petrified Wood*.
8. *Hematite Iron Ore*, from abundant "float," on Hazard property.
9. *Limonite*, Brown Iron Ore, from land of Wm. Tabb, Tinder's Crossing Post-Office.
10. *Limonite*, Brown Iron Ore, from land of G. R. Fox, six miles south from Parker's Station.
11. *Limonite*, Brown Iron Ore, from land of James Buchanan, five miles east from Parker Station.
12. *Manganiferous Iron Ore*, from land of "The Wilderness Mining Company," five miles south from Parker Station.
13. *Gold-Bearing Quartz*, from "Whitehall" Gold Mine, three and a half miles south from Parker Station.
14. *Gold-Bearing Slate*, decomposed, from same locality.
15. *Gold Ore*, decomposed vein matter, from same. Runs \$25 per ton of ore.
16. *Sulphurets*, accompanying Gold-Bearing Quartz and Black Sand, same.
17. *Pyrites*, from same.
18. *Magnetite*, Magnetic Iron Ore, from mine of Marysville Bloomery.
19. *Limonite*, Brown Iron Ore, from mine of "Catherine" Furnace, on battlefield of Chancellorsville.

20. *Pig Iron*, Charcoal, from old "Catherine" Furnace.
21. *Blast-Furnace Cinder*, from pile at old "Catherine" Furnace.
22. *Limonite*, Brown Iron Ore, from mine of Marysville Bloomary.
23. *Gold-Bearing Quartz*, from "Vaucluse" Gold Mine, seven miles northeast from Parker Station.
24. *Gold-Bearing Quartz*, from "Mellville" Gold Mine, seven and a half miles northeast from Parker Station.
25. *Sulphurets*, from "Vaucluse" Gold Mine, seven miles northeast from Parker Station.
26. *Free Gold*, from "Whitehall" Gold Mine, three and a half miles from Parker Station.

STAFFORD

was formed in 1675 from Westmoreland. Population, 7,214; area, 168,521 acres, with an assessed value of \$1,051,335.

The Potomac forms the eastern and the Rappahannock the southern boundaries. Numerous creeks emptying into these rivers penetrate the interior, and are navigable to considerable distances. All these waters abound in valuable food fishes of many sorts, affording a handsome revenue to the owners and profitable employment to labor. They are also valuable for the water-powers utilized for mills, &c.

The surface is rolling, the soil naturally good, and readily responsive to ameliorating methods of farming. Marl and lime are being applied and the effects most beneficial.

The products are corn, wheat and oats, which are the main crops, and are profitably cultivated. Trucks and fruits are also profitable branches of agriculture. Clover and orchard grass yield good returns, and the grazing and rearing of sheep and early lambs for the near markets of the District of Columbia and Baltimore adds greatly to the farmers' profits. Access to market is convenient by water along the extended littorals, and by the Richmond, Fredericksburg and Potomac railroad.

This county has abundance of forest land covered with oak, hickory, pine, walnut, elm, ash and other trees belonging to this section of the state. The minerals are gold, iron ore, and excellent sandstone for building purposes.

The people are kind and hospitable, the climate healthy and pleasant, land cheap, facilities for pleasant living and access to market all that could be desired. With all these advantages it would seem hard to find a region better adapted to furnish good homes for the intending immigrant.

THE PIEDMONT DIVISION.

This section of Virginia, as its name implies, lies at the foot of the *Blue Ridge Mountains*. This range of mountains extends from the Potomac river, at or near Harper's Ferry, to the Dan River, which forms the dividing line at the point where the range crosses it, between Virginia and North Carolina. Its direction is northeast and southwest; length about 250 miles.

The general elevation of this section ranges between 300 to 500 feet above tide-water. The sub-range of mountain ridges that runs through and parallel to the Blue Ridge in many points attains to altitudes of 100 to 600 feet higher. The area included in this section is about 250 miles long by 25 miles (average) wide—making about 6,700 square miles.

Lying, as it does, at the foot of the Blue Ridge its western border is indented by spurs running into it. Between these spurs there are *coves* of many sizes and shapes, watered by streams—the headwaters of rivers flowing east. This eastern slope of lands is broken by the *sub-range* of mountains above referred to, but the altitude and surface of this range are not of such a nature as to prevent cultivation and grazing on the highest points.

For beauty of landscape, variety of scenery, native fertility of soil, water-courses contributing to practical benefit as well as to beauty of scenery, this section is surpassed by few, if any, other sections in the United States.

Dr. Ellzey, of Washington city, D. C., in an *Address before the Southern Immigration Association*, says: "In its physical features, picturesque and lovely to an unusual degree; in climate, temperate and healthful; in the abundance and variety of its productions, unsurpassed; in all that makes life desirable and home what it should be, there is no place in this world which surpasses Piedmont Virginia—there are very few which come near it."

The counties composing this section, are Loudoun, Fauquier, Culpeper, Rappahannock, Madison, Greene, Orange, Albemarle, Nelson, Amherst, Bedford, Franklin, Henry, Patrick, in all—14. (Detailed descriptions of these are given below).

Reference to the map of Virginia will show how this section is watered. The main rivers flowing through it or by its northern and southern boundaries, are the Potomac, Rappahannock, Rivanna, James, Roanoke and Dan. Besides these are numerous smaller rivers and creeks formed by living springs. It would be safe to say that few areas of an hundred acres could be found, in which one or more living streams is not found. None of these streams are navigable, nor any of them at present, used for transportation, within the bounds of this section, except in small batteaux for limited distances.

The highest mountains found in this section are "Peaks of Otter" (one 4000 and the other 3874 feet high) in Bedford county; "Fork," 3850, "Bluff," 3522, "Ragged," 3298 feet, in Madison county; "Cahas," 3571, in Franklin county; Mount Marshall, 3374, in Rappahannock county; "Bull," 3215, in Patrick county; "Tobacco Row," 2937 feet, in Amherst; "Bull Run," 1374, in Fauquier county, and "Peters," 1824 feet, in Orange county.

RAILWAYS.

Reference to the map will show the conveniency afforded this section by railways. The Baltimore and Ohio railroad skirts the northeast line of Loudoun county for a considerable distance, and the Washington and Western runs through the county. The Manassas Gap and Warrenton branches of the Virginia Midland railroad penetrate Fauquier. The Virginia Midland railroad runs through the counties of Culpeper, Orange, Albemarle, Nelson and Amherst counties. The county of Orange is also touched by the Fredericksburg and Piedmont (N. G.) railroad at Orange Courthouse, and by Chesapeake and Ohio railway at Gordonsville. Albemarle has the latter railroad traversing it from east to west and the Richmond and Alleghany railroad on its southern border. Nelson has the Richmond and Alleghany on its southeast border, and is penetrated by the Virginia Midland railroad. Amherst is skirted on its southern border by the Richmond and Alleghany railroad for many miles, and is penetrated by the Virginia Midland railroad, and has the Norfolk and Western skirting its southern border below Lynchburg. Bedford is skirted by the Richmond and Alleghany railroad for some distance on its northern border, and the Norfolk and Western penetrates it. Franklin has the Fredericksburg and Potomac railroad (N. G.) running from the Virginia Midland railroad to Rocky Mount (the C. H.). Henry and Patrick are penetrated by the Danville and New River Railroad Narrow Gauge. Rappahannock, Madison, and Greene counties are not reached by any railroad at present, but are not far distant from the Virginia Midland railroad.

This section contains 11,024 farms. Number of acres of improved land 1,951,427; acres unimproved, 1,850,149; total, 3,791,576. Woodland covers about one-half the surface. This woodland consists of the following kinds of growth: oak (many species) hickory, chestnut, locust, walnut, pine, cedar, beech, birch, gum, tulip, poplar, &c. The soil of Piedmont Virginia, is mainly red in color, and much heavier than what is found in the Middle section. Prof. W. B. Rogers, says: "In Piedmont the red color of the soil derived from epidote and hornblende, is due to the large proportion of oxide of iron they contain—sometimes amounting to 30 per cent."

Hotchkiss says:—The red or chocolate colored soils of this section, formed from the decomposed, dark, greenish-blue sandstone here found, is generally considered the most fertile. This sandstone contains several per cent. of Carbonate of Lime. The other soils of this region are gray or yellowish. These are by no means as fertile as the darker soils; but there are red soils here as in Middle Virginia that are also poor, and for the same reasons.

The soils of Piedmont are, undoubtedly, many of them among the most fertile known, and can be made to produce a great variety and abundance of crops. They are easily worked; if neglected they are soon covered by a growth of underbrush.

Mean temperature of Piedmont—annual,	-	-	-	-	53.7
“ “ “ —winter,	-	-	-	-	44
“ “ “ —summer,	-	-	-	-	78

Rainfall, thirty-two to forty-four inches.

In the detailed description of the counties composing this section will be found lists of minerals, and also of the manufacturing establishments lying in this section, as well as some other matters of interest, especially to those who may be looking to this section for homes and investments.

GRAPE CULTURE AND ORCHARDS.

In latter years the success in raising the grape in a number of counties in this section has largely increased the production of that fruit and the manufacture of wine. In 1876 the silver medal was awarded to the wine made by a company at Charlottesville, in Albemarle county, at the Paris Exposition—the only one received for excellence. This called attention to the products of the vineyards of that locality. Since that time great progress has been made in the raising of grapes. The fruit is largely shipped abroad and the surplus made into wine. Two companies having wine cellars are in operation at Charlottesville, and many parties have found their lands peculiarly suited to the raising of the vine and have devoted considerable areas to its culture.

It is believed by good judges that the Piedmont section, particularly some large areas of it, is the best apple region in Virginia or any other State. The "Albemarle Pippin" has attained to great reputation as an apple for export. As such it is much sought after, being esteemed the best apple ever carried to England. It special home seems to be confined, however, to the counties of Albemarle, Orange, Amherst and Nelson, possibly because these counties have given it more attention.

IMMIGRATION TO PIEDMONT

has been mainly to the counties of Albemarle, Orange, Loudoun, Bedford, and Culpeper. The largest nationality represented in this is the English. Some of the finest estates in these counties have passed into their hands. Colonists from the Northern States have also settled in this section to a considerable extent. With a wise and timely sub-division of the lands of this section, this immigration will largely increase, and, added to the natural increase of population, will make this section a densely peopled country, uniting as it does, to an eminent degree, the great elements of prosperity—viz: agriculture, minerals, and manufacturing sites and facilities.

TOBACCO CULTURE.

For the ten years 1870-80 tobacco culture has increased from 9,970,580 pounds to 21,512,805 pounds. Its main production, however, is confined to the counties of Greene, Orange, Albemarle, Nelson, Amherst, Bedford, Franklin, Henry, and Patrick—Bedford, Amherst and Franklin being the heaviest producers.

PECULIARITIES OF THIS SECTION, AND SPECIAL ADVANTAGE AS A HEALTH RESORT.

Major Jed. Hotchkiss, in *The Virginias*, June, 1884, says: "We would call attention to the fact that the Blue Ridge region of Virginia is, as can be proven by the testimony of consumptives fully restored to health, the best *Sanitarium* in the United States east of the Mississippi. The sheltered eastern slopes of the long stretch of that mountain range in Virginia, above the line of 1,000 feet of elevation above the ocean level and under that of 2,500, offer hundreds of locali-

ties for health resorts for people afflicted with pulmonary diseases, that surpass any others that we know of or have read of. During the past 36 years the writer has frequently recommended this region to persons having such diseases, and in every case where the advice was followed, a restoration to health has resulted. If any one is skeptical about the efficacy of the Blue Ridge air, water, and exercise, as remedial agents for lung troubles, let him spend a few months at some point in this belt, and we will make him the referee to sustain the opinion here advanced. A young man from Vermont, a victim of this especially fearful New England disease, took his advice and spent the winter of 1882-3 there, and went away with restored health that still continues. We could name other cases.

"About the best such people could do would be to buy a few acres of the Sunward dry air slope of the Blue Ridge in Virginia and busy themselves raising grapes and other fruits while inhaling health and strength. There are at least 200,000 acres of such sanitary country for occupation, room for 20,000 people with ten acres for each, and none of it remote from railways or markets; and here, too, is the region for building up extensive establishments for health and pleasure that will have a large all-the-year-round patronage."

General McDonald, editor of the "*Industrial South*," referring to the above, says: "We may say that we have some personal knowledge of the particular locality mentioned, and from our own observation are quite inclined to acquiesce in the opinion of Major Hotchkiss. Among others whom we met at Afton (in this belt) was a very intelligent and pleasant gentleman in the government service at Washington, from whom we learned that, being subject to rheumatism, he thought it well, before determining where he would spend his summer vacation, to consult the Signal Bureau—the desideratum being a dry atmosphere. The officers examined their records, and reported to him that the driest mountain atmosphere of which they had knowledge was at a place on the Blue Ridge called Afton—of which he had never before heard, and his experience had attested the correctness of the advice that sent him there. So dry is the atmosphere that a newspaper spread on the grass at night shows no sign of moisture next morning, although the night is much cooler than the day."

COUNTIES OF PIEDMONT VIRGINIA.

GROUPING IN NATURAL SUB-DIVISIONS.	COUNTIES.
Potomac Waters.....	{ Loudoun. Fauquier.
Rappahannock Waters.....	{ Culpeper. Rappahannock Madison. Greene. Orange.
James waters	{ Albemarle. Nelson. Amherst.
Staunton Waters.....	{ Bedford. Franklin.
Dan Waters.....	{ Henry. Patrick.

PIEDMONT VIRGINIA.

ALBEMARLE

is one of the largest counties of the State, its area being 500,787 acres, 37 per cent. woodland, assessed at \$6,220,115—about \$12 per acre. Its southern boundary is James river; its western the Blue Ridge mountains. A sub-range of mountains pass through it, which, with the main range and spurs, make the surface very diversified. There is a large proportion of fine farming land in the county. It is well watered by the James, the Rivanna and the Hardware, and their tributaries. These streams furnish abundant water-power, some of which is well utilized. The soil is mainly dark red, well adapted to the staple crops of the Piedmont section, and particularly so for clover, apples, grapes and fruit generally. The Albemarle pippin took its name from this county, and here reaches its greatest perfection. In no county of the State has the culture of the grape been so successful. The fruit is largely sold, and the wine has a high reputation.

There are two large wine cellars at Charlottesville; that of the Monticello Wine Company has a capacity of 150,000 gallons, which can be increased to 200,000 gallons by the use of larger casks; and that of Mr. Hotopp has a capacity of 50,000 gallons, to which he is now excavating an addition of 70,000 gallons. Mr. Hotopp has also a house cellar of 30,000 gallon capacity now in use. Large plantings of vines are being made yearly.

This county has fine transportation facilities to markets in all directions, by means of the Chesapeake and Ohio railroad crossing its territory from east to west, and the Virginia Midland from north to south. These roads cross each other at Charlottesville, the county seat. The Richmond and Alleghany railroad passes along the south border. The minerals of this county are varied and valuable, consisting of iron, gold, lead, slate, soapstone, limestone, marble, sandstone and granite.

Albemarle has a number of towns and villages—Charlottesville in the centre and Scottsville in the southern border being the principal.

Charlottesville, the county seat, is a thriving town on the Rivanna river, in the most beautiful part of this picturesque region. Population, about 5,000.

Albemarle presents many and varied attractions which settlers are not slow to avail themselves of. Besides being one of the most fertile counties of Piedmont Virginia and the centre of a great fruit-producing region, it is the seat of two noble institutions—the University of Virginia and the Miller Manual Labor School. The University at Charlottesville is too well known to need a minute description here.

Suffice it to say that it is second to no institution of learning on the continent, and is attracting great numbers of students from all quarters of the country. The location is one of unsurpassed beauty.

The "Miller Manual Labor School" is now in full tide of successful operation. Magnificently endowed by the late Samuel Miller, of Lynchburg, a native of Albemarle, and splendidly equipped for the object indicated by its name—giving a technical education to boys—this school is being so conducted as to justify the most sanguine anticipations of its founder. Probably there is no instance in this country where a great bequest for an object like this has been administered with such wisdom and fidelity.

There are many English and Northern settlers in this beautiful county.

Albemarle county had on exhibition at New Orleans the following specimens of minerals, collected by Professor W. H. Seamon, of the Miller School. These and others to be collected by Professor Seamon are placed in trays, with compartments made of native woods by the boys of the Miller School, and the localities from which they were obtained indicated on a map of Albemarle county, prepared at this school :

1. *Species of Granite*, from North Garden station, Virginia Midland railroad.
2. *Magnetic Iron Ore*, from Mrs. Martin's land, near North Garden; mine formerly worked.
3. *Soapstone*, cut samples, from Albemarle quarry, five miles east from North Garden station.
4. *Iron Ore*, specimens from Yates' farm, near Albemarle quarry.
5. *Slate*, highly charged with graphite, same locality as 4; probably valuable.
6. *Igneous Diorite*, a parallelepipedon from dike near Faber station, Virginia Midland railroad; shows peculiar manner this rock weathers.
7. *Mica Schist*, from Faber Lead Mines.
8. *Mica Schist*, another variety from same place.
9. Ores and minerals of various kinds, 6 or 7 specimens from Faber Lead Mines.
10. *Slate*, charged with micaceous iron ore, from Norvell's farm, near Howardsville.
11. *Brown Hematite Iron Ore*, float, from same place as 10.
12. *Manganese Ore*, from same place as 10.
13. *Puddingstone Conglomerate*, from Howardsville.
14. *Red Sandstone*, from near Howardsville.
15. *Felsite*, from Israel mountain.
16. *Blue Quartz*, from Israel mountain. Thin sections of this show rutile.
17. *Massive White Quartz*, from Miller School farm.
18. *White Quartz*, from Israel mountain, filled with muscovite.
19. *Calico Rock*, from north branch of Mechum river.
20. *Hydro-mica Slates*, from Miller School farm.
21. *Quartz Crystals*, from Miller School farm.
22. *Oxide of Iron*, pseudomorph, after pyrite, from various parts of county.
23. *Ilmenite*, from Israel mountain.

The following specimens are kindly lent by Professor Wm. M. Fontaine, of the University of Virginia, from his collection :

24. *Slate*, with dendritic markings, from Albemarle Slate Quarry.
25. *Granitic Granulite*, suitable for mill stones, from Moorman river, where it is in vast quantities.

26. *Sandstone*, from Moorman river, from point west of Whitehall; very abundant.

27. *Metamorphic Conglomerate*, from Rockfish Gap tunnel, Chesapeake and Ohio railway.

28. *Epidote*, from same locality.

The following is shown in the exhibit of the Virginia Midland railroad, from Albemarle county :

1. *Graphite Slate*, three-quarters of a mile from Charlottesville.

2. *Slate*, a slab, from Albemarle Slate Co., 6 miles from Charlottesville.

3. *Iron Ore*, from Stony Point.

4. *Wine*, three cases, from William Hotopp, Charlottesville.

5. *Wine and Brandy*, one case from Monticello Wine Co., Charlottesville.

Soapstone, a block from Albemarle Soapstone Co., 5 miles from North Garden station.

The following were collected by Prof. W. H. Seamon, of the Miller School :

29. *Purple Roofing Slate*, from the Albemarle Slate quarry, 10 miles south from Charlottesville.

30. *Green Roofing Slate*, from same locality as above.

31. *Tile Slates*, from same.

32. *Marbleized Slate*, for mantels, &c., made at works of above quarry.

33. *Iron Ore*, from Stony Point.

34. *Iron Nodule*, showing black velvety surface with crystals of white quartz; from Stony Point.

35. *Magnetic Iron Ore*, from Isreal mountain.

36. *Quartz Crystals*, from Stony Point.

37. *Sandstone*, from ridge south of Charlottesville, used for foundation walls of Lewis Brooks Museum.

38. *Mica-Schist*, quarried near gas works, Charlottesville, for curbstones, &c.

39. *Mica-Schist*, from near Bethel station, Va. Midland R'y.

40. *Quartz*, from east flank of Carter's mountain.

41. *Granite*, from Dr. Michie's, near Piney mountain.

42. *Syenite*, from same locality as 41.

43. *Slate*, from Slate Hill Church.

44. *Quartzite*, feldspathic, from near Batesville.

45. *Hydro Mica-Schist*; Batesville.

46. *Greenstone*, with quartz and pyrite, from near Powell's.

47. *Red Sandstone Conglomerate*, at Dyer's store, Scottsville.

48. *Red Sandstone*, from same as above.

49. *Red Sandstone Conglomerate*, from same.

50. *Red Oxide of Iron*, from same.

51. *Coarse Felsite*, from Blue Ridge, at Turk's Gap.

52. *Syenite*, from Miller School farm.

53. *Blueish Sandstone*, from E. flank of Carter's Mountain.

54. *Syenite*, containing hydromica, from near Brownsville.

55. *Gneiss*, from Morris' mill, near Batesville.

56. *Greenstone*, from Powell's mill, near Crozet station, C. and O. R'y.

57. *Gneiss* or calico rock, from Ivy station, C. and O. R'y.

58. *Felsite*, from near North Garden station, Va. Midland R'y.

59. *Feldspar Conglomerate*, from Blue Ridge, at Greenwood station, C. and O. railway.

60. *Feldspathic Rock*, same locality.

61. *Epidosyte*, same locality.

62. *Epidote and Calcite*, from Blue Ridge, at Turk Gap.

63. *Quartzite*, feldspathic, from same locality.

64. *Hornblende Schist*, with epidote, quartz and pyrite, same locality.

65. *Hornblende Slate*, from same locality.

66. *Quartz*, with crystals of epidote; same.

67. *Conglomerate*, same locality.

68. *Chert*, same locality.

69. *Pudding Stone*, containing epidote, feldspar and hornblende; same locality.

70. *Talcose-Schist*, containing grains of amethystine quartz; same locality.

71. *Conglomerate*, same locality.

72. *Greenish Schist*, same locality.

73. *Quartzite*, same locality.

74. *Quartz*, showing jointed structure.

75. *Red Soil*, from foot of Southwest mountain; results from decomposition of epidotic rock.

76. *Beded Diorite*, from Miller School farm.

77. *Mica-Schist*, from Miller School farm.

78. *Sandy Soil*, from Mechum river bottom lands, Miller School farm.

79. *Loam*, from hillsides of Miller School farm.

80. *Map of Albemarle County*, made by pupils of Miller School, showing location of above minerals.

AMHERST

was formed in 1761, from Albemarle. It lies on the north bank of James river, which forms the boundaries of two of its sides, a distance of over fifty miles. This rich and beautiful county is twenty-two miles long, and has a mean width of nineteen miles, and contains 304,539 acres, valued at \$1,889,625. Population, 18,548.

The soil of Amherst is mostly a dark red clay and is generally rich and productive. The principal crops are corn, wheat, oats, tobacco and grass. The timber consists of fine growths of oak, hickory, walnut, chestnut, pine, maple, poplar and dogwood. This is a fine fruit county—the apple especially being largely cultivated, and grapes to a considerable extent.

Its main market is Lynchburg, with which it is connected by a free bridge. Amherst C. H. is a pleasant little town on the Virginia Midland railroad, which runs through the county. The Richmond and Alleghany R. R. runs along its southern border for some distance, and the Norfolk and Western runs on its border below Lynchburg for about six miles. The county is susceptible of great development.

The minerals found here are varied and immensely valuable. Great deposits of magnetic and specular iron ores are found here suited for the manufacture of steel by the Bessemer process, and of a purity not excelled by any ores south of Lake Superior. The brown hematite iron ores are also in great abundance, and are cheaply mined, and scarcely less valuable than the specular and magnetic. These ores are found in contact with or in the vicinity of the limestones. There are many mines of these ores worked in the vicinity. Copper, lead, slate and tin are also to be found in Amherst.

Specimens of minerals from Amherst county exhibited at the New Orleans World's Exposition.

The following were contributed by Col. Dunlap :

1. *Magnetic and Specular Iron Ores*, from Maud Vein Mines, near Stapleton, Richmond and Alleghany railroad.
2. *Syenite*, blue granite, from Bent Creek, near Gladstone station, Richmond and Alexandria railroad.
3. *Roofing Slate*, from Snowden Slate Quarry, near Rope Ferry station, Richmond and Alleghany railroad.
4. *Iron Ore*, from near Riverville station, Richmond and Alleghany railroad.
5. *Steel Iron Ore*, of Vein No. 6, near above locality.
6. *Steel Iron Ore*, of Vein No. 6½, near above locality.
7. *Copper Ores*, carbonates, malachite, bornite, azurite, red oxide, and copper glance—yielding from 27 to 49 per cent. metallic copper, from Piedmont Copper Mines in Glades.

The following are from Prof. Fontaine, of the University of Virginia :

8. *Syenite*, from Balcony Falls, occurs in large quantities.
9. *Syenite*, from Piney river, in large quantities.
10. *Granulite*, from Balcony, would make a handsome building stone.
11. *Bornite and Stalactic Copper Ores*, from Dr. Charles Slaughter's.
12. *Magnetic Iron Ore*, from 4 feet ledge of solid ore on Indian creek.

BEDFORD

was formed in 1753 from Lunenburg. The extreme length from north to south is forty miles, its width about thirty miles. It contains 494,198 acres of land, assessed at \$3,227,828. Population, 31,205.

The surface is uneven and in parts mountainous. The "Peaks of Otter" in this county is one of the loftest mountains in the Southern States, and is much visited for the magnificent views afforded from its elevated crests.

The northeast boundary of Bedford is formed by James river, and the southwest by Staunton river, and the interior has ample drainage and water power from the large tributaries of these two rivers.

The soil is a red or chocolate loam, and is generally fertile and easily improved. The productions are those common to this section. Grazing and cattle raising are prominent industries—the soil being well adapted to grass and clover. Gypsum is used largely, and with fine effect. The county has a special *dog law* for the protection of sheep, and the law works well. Sheep husbandry is prominent and pays handsomely. The recent establishment of a woolen mill at Liberty gives a home market for wool, and mutton finds ready sale at the great markets easily reached by rail. Large factories for manufacturing its tobacco are also found at Liberty.

Bedford is famous for fine fruit and grapes, and the wine made from them. The apples and other fruits from this county have been annually placed on exhibition at our fairs, and have generally taken premiums.

The following minerals are found in the county : Cyanite, zinc, flint, pyrotite mica-slate, hornblende crystals in quartz, pyrite in quartz, aluminous shales, quartz crystals, hornblende gneiss, mica, limestone, magnetic iron ore, red and brown hematite iron ore. Of the latter the supply is very large. Major Hotch-

kiss pronounces it "inexhaustible." General Imboden pronounces it to be high-grade, and practically inexhaustible. Prof. Wells, of Roanoke College, says it may be termed "The Iron Mountain of Virginia."

The county is watered on its northeast boundary by the James and its tributaries, by the Otter river and headwaters in the central part of the county, and the Staunton and its tributaries on its southwestern border. The Blue Ridge forms its northwestern boundary between Botetourt and Roanoke.

It has the Norfolk and Western railroad running through its centre, the Richmond and Alleghany railroad on its northeast border, the Virginia Midland running in close proximity to its eastern border.

Liberty, its county seat, is a flourishing town, situated on the Norfolk and Western railroad, with a population of about 3,500. Bufordsville, at Buford's Gap, in the Blue Ridge, through which the N. and W. R. R. passes, is a village much patronized by summer visitors.

The county is susceptible of great development, and has received quite a large influx of new settlers from England and elsewhere.

CULPEPER.

Culpeper county is not wholly a Piedmont county. The lower portion runs down into Middle Virginia; hence its surface is less rugged than some of the other Piedmont counties.

Its area is 232,545 acres, assessed at \$2,402,297. Of this area 30 per cent. is woodland.

This county was the camping-ground of both armies for much of the civil-war period, and was therefore denuded of much of its wood; but so rapid has been the second growth that the destructive effects of the war are scarcely visible at this time.

The soil in the upper portion is red—or chocolate-colored—in the lower portion gray.

The county is watered by the Rappahannock and Rapidan rivers and their tributaries, which afford fine sites for mills, &c.

The Virginia Midland railroad traverses the county from northeast to southwest. Culpeper—the county-seat—is on this road. It is a town of 2,100 inhabitants, and enjoys a good trade with the surrounding country. It is one of the most thrifty towns in the State.

Stevensburg is a village near Brandy station.

The minerals of this county are gold-bearing quartz, copper, iron ore, mica, &c., &c.

There are a number of factories in the county—a chair factory near Culpeper, plow-beam and barrel-stave factory near Stevensburg; also factory for spools and shuttle blocks; another for same near Cedar Run battle-field.

In "*The Virginias*," of August, 1882, Major Hotchkiss says: "We would like to have some of 'forest-wise' people, who are croaking about the destruction of our forests, and predicting that we will have a treeless country in a short time, see how rapidly and beautifully Culpeper and other counties along the Va. Midland, that were almost deforested during the late war by the great armies that camped and wintered there, are now becoming afforested in half a generation. We noticed a few days ago fuel and fencing being cut where Meade's army burned up every tree in 1863-4."

CULPEPER MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Gold-Bearing Quartz*, from "Culpeper" Mine, Major C. Knapp.
2. *Gold-Bearing Quartz*, from Richardsville, W. B. Love.
3. *Gold-Bearing Quartz*, from "Ellis" Mine.
4. *Gold-Bearing Quartz*, from Culpeper Gold-Mine, eighteen miles west from Fredericksburg.

From Va. Midland Railway exhibit.

1. *Copper and Iron Ores*, from Major E. B. Hill, one mile from Culpeper station.
2. *Iron Ore*, from W. S. Wallace, seven miles from Brandy station.

FAUQUIER

was formed in 1759 from Prince William. Its length is 45 miles; mean breadth, 16 miles. The surface is gently rolling, and in some parts hilly. The hill lands have a red clay soil; the level lands are mainly gray sandstone. The lands are fertile, and produce fine crops of corn, wheat, oats, rye and grass. It is watered by the Rappahannock, Occoquan, and numerous creeks throughout its entire surface, furnishing many eligible sites for mills and manufacturing purposes. The timber is oak, hickory, chestnut, walnut, poplar, locust, ash, cherry, cedar, sycamore, sassafras, elm, gum, mulberry, dogwood and pine. The population is 23,271. Number of acres of land, 414,402, assessed at \$7,698,486. The productions of the county furnish a large surplus for market. This is one of the healthiest and most prosperous counties in the State. The Virginia Midland railroad, the main stem, the Manassas branch, and the Warrenton branch, penetrating this beautiful and fertile county in various directions, give it excellent market facilities.

Fauquier has gold, iron ore, marble and asbestos. Mr. J. B. Beverly, Jr., and Mr. J. C. Little, in interesting letters, state that there are found in the county iron ores in the form of specular, limonite, ilmenite, pyrites; also copper pyrites. Limestone, as marble, near, the "Plains" station. This marble is very compact, close grained, gray and white. Also, barytes of excellent quality. There are several marble quarries in the county; and gold is also mined in the southern part of the county: it is in the form of sulphuret.

The Rappahannock river forms its southern boundary, and separates it from Culpeper and Rappahannock counties. This is a large and wealthy county, and has among its farmers some of the most successful and prosperous in the State. The cereals and grass, with horses, sheep and cattle, constitute the main products. Cattle fattened upon the blue grass lands of Fauquier, are in great request in the markets of Washington, Baltimore and the great cities further north, and have been largely shipped to Europe of late years.

Warrenton is the chief town and county seat, and is the centre of a refined and intelligent community. It has a population of more than 1500, and has numerous churches and schools. Near by is the Warrenton White Sulphur Springs, a popular resort for pleasure and health.

Fauquier ranks high as regards quality of soil, beauty of scenery, healthfulness and general prosperity. In its borders are thirteen railroad stations, a number of which are flourishing towns or villages.

FAUQUIER MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Iron Ore*, from Henry Sempers.
2. *Syenite*, rough block, from Alf. Chappellear.
3. *Feldspar or Kaolin*, from Wm. E. Gaskins, two miles from Warrenton.
4. *Copper Ore*, from "Sealock" mine.

FRANKLIN

was formed in 1784 from Henry and Bedford. It is 30 miles long and about 20 miles wide. The Roanoke (there called "Staunton") river runs on its northeast border, and the county is intersected by numerous creeks. The surface is rolling, as in the Piedmont counties generally. The soil is very fertile, and produces large crops of tobacco, corn, wheat, hay, and oats. The population is 24,953. This is a very healthy county. Good land can be bought at \$4 to \$10 per acre. (This estimate was made several years ago, before the railroad to Rocky Mount opened up the county to the markets of Danville, Lynchburg and other cities.) Franklin contains 435,175 acres, assessed at \$1,822,342.

This county, as is all of Piedmont, is an excellent fruit region, particularly adapted to apples and grapes; and it is also a good grass and stock-raising county. The minerals are iron, limestone, mica, asbestos, granite, and soapstone. The Franklin and Pittsylvania railway has been recently completed from Elba, near Ward's Springs, in Pittsylvania county, on the Midland railroad, to Rocky Mount, the county seat, near the centre of the county. This relieves the farmers of Franklin of a long and costly cartage of their produce, and must greatly enhance the value of property. It has given a good impetus to the development of the valuable iron ores found here, as well as to that of the agricultural resources of this fertile county.

FRANKLIN COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

1. *Asbestos*, from Capt. F. J. Chapman.
2. *Allanite*, from McMannaway Mountain, 6 miles from N. & W. railroad.
3. *Magnetic Iron Ore*, from Rocky Mount Mines, F. J. Chapman.
4. *Magnetic Iron Ore*, from Rocky Mount.
5. *Magnetite*, from "Franklin" mine, $1\frac{1}{2}$ miles northwest from Rocky Mount.
6. *Magnetite*, from Capt. C. J. Saunders' mine, 11 miles southwest from Rocky Mount.
7. *Granite*, from W. C. Smithers' quarry, 1 mile northwest from Rocky Mount.

GREENE

lies northeast of Albemarle; its northwest boundary the crest of the Blue Ridge which separates it from Rockingham, in the Shenandoah Valley. Its population in 1880 was 5,528. It contains 107,584 acres, assessed at \$581,609—about \$5 per acre; about 42 per cent. of this is woodland. Much of surface is mountainous or semi-mountainous, but the less broken portions are fertile. It is watered by the Rapidan river and its tributaries, and the headwaters of the Rivanna river. Stock, especially sheep, are profitably raised in this county.

The minerals found are syenite, copper, malachite and azurite and iron ore. Having no railroad for transportation of its products, these ores are not developed

as they might be. The Virginia Midland railroad runs within a few miles of the eastern border of the county.

Stanardsville is the county seat—a small village. With cheap lands and a healthful and pleasant climate, Greene county offers good inducements to settlers from other parts of the country. Good farms with improvements can now be bought for \$15 per acre, and unimproved lands \$1.50 to \$3 per acre, but will rapidly rise in price when penetrated by a railroad.

HENRY

was formed from Pittsylvania in 1776. It is nearly a square of 18 miles, and contains 241,700 acres, assessed at \$1,047,000. The surface is undulating—in parts hilly, and there are some considerable mountains. Smith's river flows through the middle of the county and "Mayo" through the southwest—these, with their numerous branches, afford ample water-power.

The soil of Henry is very fertile, and the climate salubrious. A correspondent well says: "In this county we have comparatively warm winters and cool summers; and there is scarcely a county in the State freer from malaria than this. Perennial creeks of fine freestone water are found in all parts."

This is a fine grass county. Clover, blue grass, timothy, orchard, Randall, tall meadow oat grass, and red-top, all grow remarkably well here, as do all the cereals grown in Virginia.

The tobacco of Henry is celebrated for its fine quality, and the production is rapidly increasing.

The grape is at home here, as are the apple, peach, nectarine, almond, (?) apricot and fig.

"The calycanthus grows wild in the sheltered dales of this picturesque region."

"Sweet potatoes do well here. From two to three hundred bushels can be raised per acre under good cultivation; in fine," as our correspondent well says, "God has blessed this county with every advantage of fertile land and salubrious climate, and all that is necessary to succeed is to trust in God, speed the plow, use commendable economy and cultivate the land in a manner commensurate with its great natural advantages."

Since the Danville and New River railroad was constructed through Henry, the town of Martinsville, the county seat, has grown with phenomenal rapidity. Within five years it has increased from a population of three hundred to about two thousand at the present time. It is a live town, having ten tobacco factories and nearly a half million of dollars invested in manufacturing enterprises of various sorts, as iron foundries, machine shops, &c.

Iron ore in immense beds, mica, soapstone, chalybeate and alum water are found in Henry.

HENRY COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

From Virginia Department Agriculture :

1. *Garnets*, common.
2. *Quartz crystals*, a group of.
3. *Garnets*, in gneiss.
4. *Magnetite*, from A. N. Price.
5. *Tourmaline*, from A. N. Price.
6. *Mica*, sheets of.

7. *Quartz Crystals*, peculiar group.

The following were collected by Mr. E. D. Frazer :

8. *Hematite Iron Ore*, from "Gravely" property, one mile west from Axton station, Danville and New River railroad.
9. *Magnetic Iron Ore*, from "E. Davis" property, near same locality.
10. *Magnetic Iron Ore*, from "Lucy Davis" property, near same locality.
11. *Magnetic Iron Ore*, from "H. P. Davis" property, near same locality.
12. *Magnetic Iron Ore*, from "McDonald" property, near same locality.
13. *Mineral*, from "Koger" property, one mile east from Bull Run, ten miles west from Spenceer station, Danville and New River railroad.
14. *Mineral*, from same locality as above.
15. *Steatite*, from "Gravely" quarry, 2 miles west from Axton station.
16. *Steatite*, from "Barker" quarry, 2 miles east from Axton station.

LOUDOUN

was formed in 1757 from Fairfax. It is the northernmost of the Piedmont counties ; separated from Maryland by the Potomac river, and by the Blue Ridge from Jefferson county, West Virginia, and from Clarke county, Virginia ; Fauquier and Prince William adjoin it on the south and Fairfax on the east.

Within these limits are included 322,395 acres of the finest land to be found in any one county in the State, and it is assessed accordingly at an average of \$30.60 per acre, which is considerably higher than that of any other county.

The surface of Loudoun is varied with mountains, gently sweeping hills and broad valleys, of which the greater part is exceedingly fertile, yielding immense crops of corn, wheat, hay and oats, and supporting great herds of fine cattle and flocks of sheep. Much attention has been paid to improving breeds of horses, cattle and sheep by the wealthy and intelligent farmers of Loudoun.

The Washington, Ohio and Western railroad, which traverses this county, dividing it almost equally, furnishes an outlet for the immense exports of cattle, grain and hay sent from the central portions of Loudoun, and the northern edge of the county is in easy communication with the Washington branch of the Baltimore and Ohio railroad and the Chesapeake and Ohio canal, just across the Potomac.

Population, 23,741.

Leesburg, a fine old town, is the county seat. It has a population of about 2,000.

A good deal of money from abroad has been invested here, but the high price of land has kept out much increase of population by immigration.

The mineral wealth of this county is very considerable—iron, copper, silver, barytes and marble—of which the following specimens were exhibited at the World's Exposition at New Orleans :

1. *Specular Iron Ore*, from near Leesburg, said to be in quantity, from Prof. Fontaine.

2. *Chalcopryrite*, from near Leesburg, said to be a promising vein, from Prof. Fontaine.

The following were contributed by the "Eagle Mining Company," of Leesburg, F. A. Wise, general manager :

1. *Carbonate of Copper*, from vein 3' wide, developed to 25' deep. Assays by Oxford Copper Company of New York, give 51 per cent. of copper and 27 ounces of silver per ton.

2. *Sulphuret of Copper*, from vein 10" wide, developed to 50" deep. Assays by Oxford Copper Company of New York, give 12½ per cent. of copper.
3. *Iron Ore*, from vein 4" wide and 50" deep. Yields 55 per cent. metallic iron by assay of W. P. Lawver, of U. S. Mint.
4. *Sulphuret of Copper*, from vein developed 50". Yields 11 per cent. of copper and 1 ounce of silver per ton by assay of W. P. Lawver, of U. S. Mint.
5. *Carbonate of Copper*, red oxide and glance, from vein 3" wide, developed to 25" deep. Yields 50 per cent. metallic copper and 27 ounces silver per ton by assays.
6. *Iron Ore*, from vein 2" to 4" wide, developed 50". Yields 55 per cent. metallic iron.
7. *Oxide of Copper*, from carbonate vein, developed 80" on 4" wide vein; 25" deep.
8. *Sulphuret of Copper*, from vein 8" to 15" wide, developed 50".
9. *Iron Ore*.
10. *Barytes*, heavy spar, vein undeveloped.
11. *Iron Ore*, from 50" level of Eagle Mining Company's shaft.
12. *Marble*, from quarry of "Virginia Marble Company," three miles east from Middleburg. The deposit has been demonstrated to be of great extent; the marble has been pronounced of a very superior quality. Contributed by Major B. P. Noland.
13. *Marble*, from same as above.
14. *Marble*, from same as above.
17. *Copper Ore*, James Pinkham, from Va. Dept. Agriculture.

MADISON

was formed in 1792 from Culpeper. It is about 33 miles long, and contains 212,000 acres of land, assessed at \$1,720,200. This is an excellent grass and grain-producing county. Besides being admirably adapted to fruit and grape culture, and fine tobacco, and containing valuable mineral deposits, as will be seen from the following geological and general sketch of the county by A. G. Grinnan, Esq.—a description so good that it is given unabridged :

"The nature of soils is largely controlled by geological formations, and this is well shown in Madison county.

"An arm of the large secondary formation of the triassic period, which extends from the Rapidan river, through Culpeper county and other counties to the Potomac river, extends across the southeastern part of the county, crossing the Robertson river above its mouth, and having a width of one or two miles, where the formation is a red or chocolate colored shale, the super-imposed soil is of excellent quality, producing fine crops of wheat, corn and grass. Where grey sandstone predominates the soil is of medium fertility, but easily improved.

"It has been recently stated by high authority that soils of similar secondary measures in other parts of Virginia have been found eminently adapted to the growth of high grade tobacco.

"Between this secondary deposit and the Rapidan river the underlying rocks for twelve or more miles are mostly epidote and greenstone, similar to those of the adjacent Southwest mountain range of Orange county, the decomposition of which furnish potash and lime. The Madison lands adjacent to Orange county appear to be of better quality, owing to some admixture of sand from the adja-

cent sandstone belt, and furnish in many places soils remarkably well adapted to the culture of grapes, and particularly of the valuable Catawba grape, which it is difficult to raise in many sections.

"The portion of the county lying between the secondary deposits and the region adjacent to the foot-hills of the Blue Ridge mountains is underlaid with gneissoid sandstone, decomposing granites and metamorphic strata, all azoic, and furnishing in disintegration but little lime and potash or other mineral ingredient of value; and the soil, excepting upon the streams, is of medium quality, gray or red color, but readily improved. Adjacent to the foot-hills of the Blue Ridge the country rocks show marks of the metamorphic or igneous action accompanying the elevation of the Blue Ridge, and produce fertile soils. The slopes of the mountains grow excellent tobacco, potatoes, and rye. The Blue Ridge extends along the entire northwest border of the county, throwing out long spurs, some of which nearly attain the height of the parent Ridge—whose highest point in the county is 3,860 feet above sea level. Other points reach 3,600 and 3,400 feet. Average elevation of the Blue Ridge about 3,000 feet. Its top and more elevated slopes furnish excellent grazing when cleared, where cattle thrive well, owing to lower temperature and freedom from annoyance from insects.

"The lower parts of the mountains and the numerous and beautiful valleys and glens are eminently adapted to the growth of grapes, apples, and other fruits, where the elevation exceeds 500 feet above sea, and does not exceed 1,500 feet, for in this range of elevation are places where dew and frost are not often seen, and late frost rarely ever injures fruit. No section of Virginia is better adapted to the growth of pippins and other valuable apples.

"The value of lands along the eastern slope of the Blue Ridge, not exceeding 1,500 feet elevation, for fruit raising, does not seem to be properly appreciated when we consider that from absence of late frosts in many places, there is almost uniform success with proper attention.

"Upon the rivers and creeks in the county are numerous bodies of very rich lands—the largest of these is on the Robertson river near Madison Courthouse, where there are about 1,400 acres in one bottom, mostly very fertile—evidently once the bottom of a lake.

MINERALS.

"A large vein of impure graphite crosses the eastern part of the county from the late George W. Clark's farm to the Bond farm on the Rapidan, northwest of Liberty Mills. It makes an excellent fire-proof paint, and very durable crucibles; a vein of yellow ochre accompanies it. Near it runs a large ledge of coarse steatite, which makes hearths and fire-places capable of resisting injury from heat. Occasionally bodies of hematite iron ore are developed along the line of these minerals. North of this, gneissoid sandstone furnishes excellent building stone.

"On the head waters of the Rapidan and Robertson rivers are large seams of magnetic and specular iron ores. Sulphurets of copper are found in very small quantities. The seams of red oxide and native copper appear to be large at some points. They are associated with epidote quartz and greenstone. One vein on Stony Man mountain, worked many years ago, has an apparent width of fifteen feet, ores averaging six or seven per cent. of metal. On the Hawksbill mountain, a seam which has not been explored, can be traced by outcrop of the ledge for over half a mile. These ores (if native copper can be called an ore) are found in several other localities, and, with the Shenandoah Valley railroad, now built a few miles to the west of the Blue Ridge, furnishing convenient transportation, it is

hoped that capitalists will soon develop these mineral deposits, one of which Siliman, Shepherd and other noted mineralogists have declared to have great value.

"The extreme range of the thermometer during the past twenty-five years is from sixteen degrees below zero in winter up to ninety-seven degrees in the shade in summer. More generally there is merely sufficient cold weather to furnish ice, and the summers are pleasant, with a bracing air. Malarial diseases are rarely ever seen. All the conditions favorable to longevity prevail.

"The mean temperature of springs taken in June in the southeastern part of the county is $58\frac{1}{2}^{\circ}$ Fahrenheit, and probably the average of the county would be fifty-seven and a half degrees—the springs near the mountains being colder. As the temperature of springs about corresponds with the yearly mean temperature, we may safely put the average for the county at fifty-eight degrees, which is the mean for Marseilles, in France, and Madrid, in Spain, and also that of North Carolina."

The Virginia Midland railroad passes near the eastern border of the county, and the Chesapeake and Ohio near the southern line, and the Shenandoah Valley, as stated, is near the western border of the county.

MADISON COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

From Professor Fontaine.

1. *Mica-schist*, from near Madison Courthouse; in large quantities—a good building stone.
2. *Diorite*. Occurs in heavy masses with the next.
3. *Diorite*, from an immense dyke, seemingly 1,000 feet wide, in 6 feet of Blue Ridge, on Milan Gap road.
4. *Metamorphic Diorite*, from ledge $2\frac{1}{2}$ miles west from C. H., on Milan Gap road.
5. *Variety of Syenite*, that occurs with *Unakite* at Milan Gap of Blue Ridge.
6. *Variety of Syenite*, that occurs with *Unakite* at Milan Gap of Blue Ridge.
7. *Unakite*, occurs in *Syenite* on top of Blue Ridge at Milan Gap.
8. *Unakite*—same place as above.
9. *Magnetic Iron Ore*, from F. H. Hill, C. H., from Virginia Department of Agriculture.

NELSON

is quite a compact county, lying between the Blue Ridge and James river, and Albemarle and Amherst counties. It is generally hilly and broken, especially in the border next to the Blue Ridge. On the opposite border the lands are undulating and on James river and the other streams they are alluvial and very rich. The area is 301,694 acres, valued at \$2,057,714; of this 47 per cent. is woodland. The soil is originally good—mostly red loam, or gray, with red clay subsoil. With a good rotation of crops, free use of grasses and sheep husbandry on the most broken parts, it would afford a fine field for profitable industry. The lands are especially adapted to growing apples, and pears. Here, too, are found most eligible locations for vineyards.

The county is well watered, having the James washing its whole southern border, besides the Tye, Rockfish and their tributaries. These, with the James, along which are numerous solid masonry dams, formerly used by the old Canal

company, afford an extraordinary amount of water-power, some of the sites possessing advantages equal to any in the State. Only a few of these are at present utilized. The minerals of the county are manganese, largely mined at Midway Mills and Warminster (from time to time), rutile, copper (green and blue carbonates), garnet, ochre, kaolin (in immense beds), iron, hematite, specular and magnetic. The Greenway mines have been largely worked and the ore analyzed 65.14 metallic iron, 0.029 phosphorus. Hematite at "Sleepy Hollow Mines" analyzed 53 per cent. metallic iron. These metallic resources are destined to large developments under more favorable auspices than now exist.

The country is penetrated by the Virginia Midland railroad running through its whole width, and the Richmond and Alleghany railroad skirts its entire river border.

Lovington, a small town near the centre, is the county seat. New Market, at the mouth of Tye river, is a small village.

This county offers a fine field for new settlers and investment of capital. The Richmond and Alleghany railroad company offers special inducements to those who buy and settle along its line.

NELSON COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Manganese*, from Cabell mine, near Warminster, R. & A. R. R.
2. *Limonite*, brown iron ore, from Sleepy Hollow mine, two miles from Norwood, R. & A. R. R.
3. *Trap-rock*, from dyke, one mile above Norwood.
4. *Mica-schist*, from Combined Lock station, R. & A. R. R.
5. *Quartz and Feldspar*, from same locality as above.
6. *Magnetite*, magnetic and specular iron ore, from mine near Greenway; a steel ore that has been shipped to Pittsburg.
7. *Tufaceous Quartz*, from Greenway.
8. *Magnetite*, magnetic and specular iron ore, Mundy's mine, near Allen's creek, R. & A. R. R.
9. *Specular Iron Ore*, from Wheatland mine, near Riverville, R. & A. R. R.

From Prof. Fontaine.

10. *Magnetic Iron Ore*, from Moores near Faber station, Va. Mid. R. R.
11. *Manganese Oxide*, from Simpson's mine, Midway Falls.
12. *Hornblende and Garnet*, in quartzose rock near Faber Mills.
13. *Rutile*, occurs in gneiss, often in large masses.
14. *Kaolin*, from Dr. J. H. Shelton, from Va. Dept. of Ag.
15. *Ochrous Clay*, from James Miller.
16. *Copper Ore*, green and blue carbonate, &c., from Rawlings and Armentrout, Staunton.

From the Virginia Midland Railway exhibit.

1. *Iron Ore*, from near Faber station.
2. *Kaolin*, from eight miles from Arrington station.

ORANGE

was formed in 1734 from Spotsylvania. Its greatest length is 38 miles; the width varies from 5 to 14 miles.

Population, 13,993; area, 213,326 acres, valued at \$2,283,284.

It is abundantly watered by the Rapidan and North Anna rivers and their tributaries.

The surface in the eastern part is beautifully undulating; the central and western portions have hills and mountains of gentle elevation, covered to their tops with forests of valuable timber, and farms of unsurpassed beauty and productiveness.

The soil is mostly a dark red clay formed from ferruginous and calcareous rocks, and is very fertile; producing large crops of grain and grass, and some tobacco. As a grass-growing and grazing county, this should yield precedence to no other.

The rearing of thoroughbred stock is extensively carried on by careful and intelligent farmers.

The average assessed value of land in this county is \$10.70 per acre, but the improved farms command prices several times greater than that.

The railway facilities are excellent, and are furnished by the Chesapeake and Ohio, Va. Midland, and Orange and Fredericksburg railroads, which are located in such a manner that all parts of the county are convenient to one or another of them.

Gordonsville, near where this county corners with Louisa and Albemarle, at the junction of the Chesapeake and Ohio and one branch of the Va. Midland road, is the largest town. Orange, the county-seat, is a small town on the Va. Midland, at the point of junction of the Fredericksburg Narrow-Gauge road.

The timber consists of large growths of the various kinds of oak, of hickory, pine, chestnut, poplar and sycamore.

Iron ores, red and brown hematite, and magnetic iron ores are abundant and rich. Limestone, some of it hydraulic, and marble are found at the base of the Southwest Mountains. Gold-bearing quartz, asbestos and fire-clay are found in Orange.

ORANGE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Collection of the Va. Midland Railway:

1. *Iron Ore*, from Madison Station, from W. P. Hicks.
2. *Iron Ore*, from same locality, from Reid & Wallace.
3. *Terra Cotta Clay*, from same locality, from Reid & Wallace.
4. *Yellow Ochre*, Iron Paint, from same locality, from Reid & Wallace.
5. *Iron Ore*, from "Falkner" land, one mile from Madison Station, from Glass & Co.
6. *Iron Ore*, from "Taylor" Mine, near Courthouse, from Ben Rawlings.●

From the Va. Department of Agriculture:

1. *Red Iron Ore*, micaceous, from J. C. Harrison, Barboursville.
2. *Red Iron Ore*, from H. C. Baker.
3. *Brown Iron Ore*, from Erasmus Taylor.
4. *Slate*, from Erasmus Taylor.

PATRICK.

This is the extreme southeastern county of the Piedmont section. It borders on the North Carolina line, being separated from it by the Dan river. Until very recently it was cut off from the world, having no means of communication, except the ordinary dirt road. Its area is 277,219 acres, assessed at \$934,944. This low price is due to the cause above alluded to and to the fact that 63 per cent. of the land is woodland. Large tracts have never been settled up.

The lands are watered by Smith's river, a large tributary to the Dan, and other streams. A part of this county is hilly or semi-mountains, but there is a large plateau, called "The Meadows of Dan," which is well adapted to grass.

The timber of this county is very abundant, and of fine quality. The county is also famous for the apples, and the abundance of small fruits which grow wild.

The minerals are iron of the finest quality—lead and silver. During the war this iron was worked by the Confederate Government.

Very recently the Danville and New River railroad (N. G.) has been completed to Taylorsville, the county seat. This is the only village of note in the county.

This county offers the greatest inducements to settlers on account of cheap lands and probable rapid growth. Large bodies of land can be bought at low figures.

PATRICK COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Virginia Department of Agriculture.

1. *Hornblende*.
2. *Magnetic Iron Ore*, from Judge Lybrook.
3. *Copper Ore*, low grade.
4. *Steatite*.
5. *Mica*.
6. *Limonite*.

The following were collected by Mr. E. D. Frazer.

7. *Magnetic*, from "Floyd mine."
8. *Hematite*, from "Moris mine."
9. *Hematite*, "Nowlin" mine.
10. *Magnetite*, from Barksdale furnace property.
11. *Magnetite*, from same locality.
12. *Magnetite*, from "Hairston" mines.
13. *Magnetite*, from Forley mines.

RAPPAHANNOCK.

This county lies on the Upper Rappahannock river, which divides it from Fauquier county. Its surface is high and hilly, but is fine grazing land. Its area is 170,770 acres, of which 31 per cent. is woodland, assessed at \$1,749,607, a high average considering that no railroad or public transportation is found in the county.

It is well watered by the Rappahannock river and its tributaries.

Washington, its county seat, is near the centre of the county. Besides this there are Flint Hill, Woodville, Sperryville and Amissville. At the latter place there is a large tannery. Many fine cattle and horses are carried to market from this county.

Efforts have been made to construct a railroad into this county by a branch road from the Virginia Midland at Warrenton or Culpeper, which will doubtless be done before long.

Although off the railroad, this fine county offers great inducements to settlers in its fine lands, salubrious climate and beautiful scenery, and the grazier is practically not far from the great markets of the country.

SHENANDOAH VALLEY.

THE VALLEY

is a portion of the great 'Central Appalachian Valley that extends for hundreds of miles, from Canada to Alabama—a broad belt of rolling country, enclosed between lofty mountain ranges, diversified by hills and valleys, with many winding streams of water—the Blue Ridge on the east and the Kittatinny or Endless mountains on the west. This is a region of limestone rock, shales, slates and clays.

The lowest point of the Shenandoah Valley is at Harper's Ferry, in (now) West Virginia. The lowest or most northeastern county in Virginia is Frederick, the highest is Augusta, respectively 242 and 1,863 feet above tidewater. The length of the Shenandoah Valley in Virginia is 136 miles.

In this space are seven counties. The lowest is Frederick, then Clarke, Shenandoah, Warren, Page, Rockingham and Augusta. In the latter county are the head springs of the Shenandoah river.

A large portion of the Valley was settled by Pennsylvania Germans in the early history of the State. These people brought with them their frugal habits, their conservative systems and modes of farm management, which served to keep it what nature made it to be—one of the most desirable tracts of country in the United States.

The Valley is the region of cambrian and lower silurian rocks—Formations, I, II and III of Rogers or from Potsdam to Hudson river formations of New York inclusive—a country mainly of limestone, slate and shale rock, with a fertile soil and undulating surface. The section across the Valley through Staunton gives some thirty alternating bands of slates and limestones of various kinds, some magnesian, others silicious or rich carbonates; some compact, others flaggy or slaty, &c. Among these are beds of chert, iron ore, umber, &c. This formation extends northward, and forms the rich Cumberland, Lebanon, and other Valleys of Maryland, Pennsylvania and New Jersey, the Hudson and Mohawk Valleys of New York and the Champlain Valley of Vermont. Southwest it becomes the Valley of East Tennessee, and extends into Alabama, making a grand Central Valley some 1,500 miles in length, of unsurpassed fertility and productiveness. This formation underlies a large portion of Scotland, especially the southern and central parts; much of the area of Wales, and large districts in the west, southwest and northwest of England. The most fertile portions of New York, Ohio, Indiana, Kentucky, Wisconsin and Missouri are also underlaid by this rock.

Belonging to the Valley counties (the lines of which extend to the summit of Blue Ridge, and cross, often, several ranges of the mountains on the west) of course we have half of the summit, and all the western slope of the Blue Ridge, already described. To it also, politically, will belong parts of the Upper Silurian and Devonian system, that are more specially referred to in the account of the Appalachian country. These form long ridges that rise up and run for great distances in the Valley, like the Massanutten and other mountain ranges that divide the great Valley lengthways into two parallel valleys. The rocks of the Valley generally dip both ways, to the southeast and to the northwest, making an anticlinal. The upturned edge of the rocks strikes or runs northeast and southwest with the Valley. Fragments of the sub-carboniferous formation are found along the western margin of the Valley, sometimes containing beds of semi-anthracite coal.

MINERALS.

Iron ore, brown hematites, are found in "pockets" in all portions of the Valley. These can supply large quantities of fine ores. Umber exists in many places. Ochre is worked successfully in Page county. In the mountain ranges that rise up in the Valley are very extensive beds of several varieties of iron ores. The Valley limestone makes an excellent *flux* for iron. The large deposits of *pure kaolin* in Augusta county, have been used in the manufacture of "stone china" and "Rockingham" wares, and is now made into pipes, tiles, &c.

SOILS.

The soils of the Valley are quite numerous; they are generally called *limestone soils*, as this is a limestone region. The prevailing soil is a stiff, clayey loam—a durable and fertile soil, well adapted to the growth of grass and grain. In the slaty belts the admixture of the decomposed aluminous rocks makes a lighter and warmer soil. There are also belts of sandy or gravelly soil that are cold and require cultivation and fertilizing to make them productive, but once redeemed they yield very well. Much of the larger portion of the Valley has naturally a good soil, rich in the elements of fertility. The soil, like the rock, runs in belts with the Valley, and the lean ones are the smaller number. The streams, as in all limestone regions, are winding, so there is here a considerable area of bottom lands. Washington said of this section that "in soil, climate and productions, in my opinion, it will be considered, if not considered so already, as the Garden of America."

Here we find the natural *blue-grass lands*, the home of the stock-raiser and dairy-man; the *heavy clay lands*, fat in fertilizing ingredients, always repaying the labor spent on them in crops of corn or other grain; the light slaty lands famous for wheat crops; the poorer *ridge lands*, where sheep rearing should be followed.

TRANSPORTATION FACILITIES.

The Valley is well supplied with railway facilities—every county having one or more railroads.

1st. The Valley Branch of the Baltimore and Ohio railroad from Harper's Ferry (West Va.) traverses the whole length of Frederick, passing by Winchester, its chief town, then traverses Shenandoah county, forming a junction at Strasburg

with the Manassas branch of the Virginia Midland railroad, then through Rockingham to Staunton, in Augusta, where it crosses the line of the Chesapeake and Ohio railway running east and west, thence through Augusta to Lexington, in Rockbridge county, its present terminus.

Parallel with this line the Shenandoah Valley railroad, from Hagerstown, Maryland, runs throughout the whole Valley, striking Clarke county near Berryville, thence through Clarke and Warren. At Riverton it intersects the Manassas branch of the Virginia Midland railway. Thence through Page, Rockingham and Augusta counties. In the latter it intersects the Chesapeake and Ohio railway at Waynesboro'.

The latter railway traverses Augusta county from east to west, striking Staunton, its county seat and the largest city of the Valley.

It will thus appear that few sections have superior facilities for transportation of persons and property than this Valley.

CITIES AND TOWNS.

Staunton, Winchester, Harrisonburg, Woodstock and Berryville are the chief cities and towns in this part of the Valley. These will be described more particularly under the head of the counties in which they lie.

THE "VALLEY" COUNTIES, SOUTH OF AUGUSTA.

The economic, as well as the scientific geology of the counties of "the Valley" here treated, present remarkable general similarity in the order of arrangement throughout; but, the departures from absolute uniformity, are, however, in some localities, quite considerable.

This series of unusually rich agricultural and mineral counties: Botetourt, Roanoke, Montgomery, Pulaski, Wythe, Smyth and Washington, with a small triangular piece of Scott county, extend from north of James river to the Tennessee State line. It is bounded southeast by the archæan and primordial rocks of the Blue Ridge and the more westerly limb of its bifurcation; and on the northwest side are the Upper Silurian and Devonian rocks of the great North mountains, trending generally northeast and southwest, under such names as Gap and Walker's mountains, and for a part of the way the boundary is Clinch mountain, with the same formations.

The main central portion of the Valley is composed of Cambrian and Lower Silurian limestones, calcareous and feriferous shales, &c., to the decomposition of which, *in situ*, "the Valley" not only owes its great fertility as a grass and grain producing region, but some of its valuable beds of iron ores are thought to be thus derived. Then, this central limestone belt is flanked on the northwest by a not inconsiderable, and sometimes quite valuable, band of the earliest coal rocks, yielding here and there excellent semi-bituminous and semi-anthracite coals, in beds varying between 2½ and 20 feet in thickness—all in "the Valley." The grass that naturally coats the soils, when the timber is removed, is the famous "Kentucky Blue-Grass" (*poa-pratensis*); and when the land gets down somewhat, from over-cultivation, this is often replaced by another species of blue-grass (*poa-compressa*), more truly blue in appearance than the more valuable kind first mentioned.

The different sub-divisions of geological formations are found in these counties to read in faulted sections; beginning on the southeast in the later sub-epochs of

the archæan age, and pursuing the reading northwest, over a great fault on the northern or northwestern side of the Valley, through a down throw of proto-carboniferous rocks, to the Devonian and Upper Silurian of the great North mountains—in such order and with such modifications as may be shown later on.

Those thrusts of pressure, evidently projected from southeast toward northwest, which were exerted in folding and faulting the earth's surface, throughout this region, so acted upon the Blue Ridge as to elevate that range, not only much higher at one time than it now is, but really overturned, some degrees beyond the perpendicular, much of its stratification; so that we often see the Huronian rocks, which, theoretically belong nearer the heart, or toward the south slope of the mountain, pressed over with their valuable gold, tin, silver, copper, magnetic and specular iron ores, to the "Valley" side of the mountain. Thus, in the south east of Botetourt, tin ores may yet be found, as they are now reported to have been discovered on Bent mountain, in Montgomery, and southwest side of Roanoke county. In Montgomery county, on Brush creek, gold has not only been found in that arm of the Blue Ridge, or Pilot mountain, but companies are now preparing to erect works for its reduction from the quartz, to which it has been traced. The gold bearing rocks must have been there identified as being of greater thickness and persistency than was at first believed possible. This is also true of the region of Little River, somewhat farther southwest. It would not be surprising to hear of the discovery of tin and gold both, in the southern sides of Pulaski, Wythe, Smyth and Washington. These valuable Huronian strata, which also yield much valuable red iron ore, are succeeded, next, northwardly, by the Potsdam or Primordial rocks, which show the first positively ascertained evidences of organic life, in fossil remains of the *Scokithus Linearis* and certain ancient *fucoids*. In these rocks, which extend generally along the northern base of the Blue Ridge, in its straight continuations, are found, besides excellent glass sand, three or more of the most massive, persistent and valuable iron ore deposits ever found in Virginia. The ore is usually a Limonite, often largely mixed with specular ore and oxide of manganese, and found in quite accessible bodies, measuring from 20 feet to 150 feet and more in thickness, between their enclosing walls. From numerous openings on this line of deposits, in these counties, the ores have been largely mined and converted into iron at various furnaces. From both sides of the anticlinal ridge of Potsdam rocks in Botetourt county, lying between the Norfolk and Western and Shenandoah Valley railways, a large tonnage is annually removed from the Houston, Munford and other mines, and reduced in the Crozer furnace at Roanoke city.

These vast lines of Potsdam ores make large exhibits on the southern side of Roanoke county; in Montgomery county, on Bent mountain, Pilot mountain, Little river, &c.; in Pulaski county, on Laurel creek, at Radford furnace, Calfee's on New river, and at other places; in Wythe county, on the side of Poplar Camp mountain, on Francis Mill creek, where one deposit is over 100 feet between walls, and at numerous other places in Iron mountain, besides being found largely developed on both sides of Hick mountain, an anticlinal of Potsdam rocks in the centre of the county; in Smyth county, at Alexander, Neitch, and Rowlands on spurs of Iron mountain, where it sometimes develops as a red iron ore of high grade, at Grose's and other places in Iron mountain, besides many extensive and valuable deposits in White Rock and Glade mountains in the middle of the county; in Washington county, on spurs of Iron and Holston mountains, in extensive deposits, sometimes accompanied with red hematite.

From numerous openings in all the places mentioned, Prof. A. S. McCreath, chemist, and others have carefully selected and analyzed samples, from which it is inferred that the metallic iron in these Potsdam ores varies from 50 to 56 per cent.; silica, 3 to 10 per cent., and phosphorus, 0.138 and higher.

Dr. Frœhling, chemist, of Richmond, in those of Lick mountain, finds in seven samples an average of met. iron, 52.210; met. manganese, 1.491; phosphorus, 0.216; some phosphorus assays being as low as 0.039, the highest being 0.508 per cent. Much of the red iron ore found in the Potsdam rocks averages 56 per cent. met. iron and 0.040 phosphorus, particularly that in Smyth county. The manganese ore so far reported as accompanying these iron ore deposits is in veins or deposits of two to eight feet thickness, and much of it is of the standard percentage required by commerce. It has been discovered in every county where Potsdam rocks are found.

This great band of Potsdam or primordial rocks presenting its sometimes folded outcrop generally to view, on the western lower flank of the Blue Ridge, is the great floor or bed rock—the corner-stone, so to speak, of the great paleozoic series. Not far above it, in the order of natural superposition, is that equally valuable band of dolomitic limestones, some ledges of which yield the excellent cement of James river, and, farther southwest, the extraordinary deposits of lead and zinc ores, the floor and roof of which are composed of the famous bands of brown iron ores of the *New River—Cripple Creek Basin*, so much sought after for car wheel purposes. While all the Valley counties may, after exhaustive research, reveal the presence of these zinc and lead ores of No. II, it is not until you reach Roanoke county that any appreciable thickness of them has been so far reported. Here, 3 miles south of Roanoke city, the analysis of Dr. Gascoyne, State chemist, reveals not only a high per centage of zinc and lead, in one small sample, but \$15 in silver to the ton.

Another sample sent west for assay returned \$25.00 to the ton in silver. Then, again, in Montgomery county, it is found at Langhorne's, above Big Spring and near the north flank of Pilot mountain (Blue Ridge, western limb); also at Calfees, near Little river. In Pulaski some of the rocks at Peppers' Ferry show it. At Calfees, four miles below Reed Island creek, and on the opposite of New river, lower down, in a cliff. Then, proceeding southwest, these great measures not only spread out laterally, but thicken vertically, so that when you reach Bertha and Falling Cliff Zinc mines of Wythe county the deposit is at least 200 feet from floor to roof, and more than 1,800 feet wide—almost wholly a pure zinc ore, existing as a silico-carbonate, from which a metal is made at the smelting works, now in operation at Pulaski station, N. & W. railroad, yielding the following, by the analysis of Dr. P. de P. Ricketts: Metallic zinc, 99.9629; iron, 0.0371; lead, none. Then, again, prominently at the old Wythe Lead and Zinc mines, on New river, same county, where it exists in beds of 50 feet thickness and over, as blende and galena, below the zone of decomposition. These latter works have been in operation since long before the War of Revolution—probably since about 1756—supplying lead to the heroes of '76, and nine-tenths of that used by the Confederates in the late war. These mines have sold to reducing works, on the seaboard, over 30,000 tons of zinc silicates, carbonates and silico-carbonates of a high order of purity, and now manufacture into shot and pig-lead 1,500 to 2,000 tons of lead annually. Then, again, a few miles farther southwest, same county, near Ivanhoe Furnace and Painters, the same extensive bands of zinc and lead exist, accompanied on one side with barytes. At other places, pursuing this basin of Cripple creek, southwest, these deposits are exposed in Wythe and Smyth coun-

ties—as at James', Wythe, and at Alexander, Neitch & Rowland's, in Smyth county, on Comers creek, besides Preston's and others; and then becoming less in thickness, seem to disappear from the rocks in Washington county to make their appearance again in Tennessee. Nearly along with this great band of rocks, as at Mock's Mills, in Washington and other places, are deposits of handsome onyx-like travertine marble.

With the vast deposits of lead and zinc, above described, there are much thicker bands of car-wheel iron ores just above and below them, showing their greatest development, in Pulaski and Wythe counties, so far as explored. In Wythe this whole stratification is over 900 feet thick, from floor to roof (ores and limestone occupying separate spaces in the same stratification) and spreads out over two and a half miles in width in the New river Cripple creek basin, the brown iron ores being accompanied with valuable quantities of magnetic shot ores and red hematites. It is upon this line of inexhaustible ores, extending from below the Clark Bank, in Pulaski, through Rich Hill and the intervening beds of Graham and Robinson and others, in Wythe county, to the famous Cregger Bank, on Cripple creek and above that point, that the twenty-one furnaces and forges of that region are built, where, it is now said, that by the use of coke as a fuel, iron can be made at \$9.50 per ton, it being necessary to use there less than 500 pounds of limestone to the ton of metal produced. Farther southwest, in Smyth and Washington, these ores also show on south fork of Holston river, losing there in thickness, but changing to red hematites and semi-magnetites of a high order.

As to a close chemical determination of these ores an average of seventeen samples gave Prof. McCreath, metallic iron, 54.514; phosphorus, 0.106; siliceous matter, 7.094 per cent. Other chemists, such as Dr. Drown, Dr. Froehling, and others, found many averages, some of which may be possibly just within the limits required for Bessemer purposes. In a few instances, as with the assays of McCreath, the ores of Rich Hill and Ivanhoe were found within the Bessemer standard. The Smyth and Washington county red hematites and semi-magnetites of this zone were found by assay to yield 80 per cent. of metallic iron and 0.049 phosphorus.

Next in order, follow the great body of limestones of the "Valley" interstratified with sandstones, shales, slates, and thin beds of iron ores—the sandstones, shales, &c., rarely ever assuming large dimensions, when compared with the limestones as a whole. This regularity of these bands is sometimes interrupted by the intrusion, from one side or the other, of the Valley's lateral or marginal rocks that belong higher or lower in the geological scale. In Botetourt and Roanoke, in the instances of Purgatory, Mill, Tinkers and Fort Lewis mountains, the great limestones of III are out of sight beneath great cross flexures from the north side of immense bodies of rocks of the upper Silurian, Devonian, and proto-carboniferous periods, chiefly sandstones, slates, heavy bands of iron ores of V to VII (R), and beds of coal of a broken character, as that near Tinker's mountain. This is also true, in a measure, of Drapers mountain and the region just north of it, in Pulaski and Wythe counties, where the middle of the Valley is occupied by the rocks of V to VII (R), &c., and the region just north along Peak Creek, by proto-carboniferous strata, with really valuable coal veins. While in Wythe and Smyth counties, over definite areas, the great Valley limestones are, on the contrary, protruded and lost by an up-throw of the great Potsdam floor with its iron and manganese ores;—as in the case in Lick mountain in Wythe, and Glade and other mountains in Smyth county.

With these general exceptions, the great Valley limestones are the marked geological features of the "Valley." Occasionally they assume the character of

marble; again, they are so impregnated with magnesia as to become a source for the manufacture of hydraulic lime. From numerous samples carefully tested by Prof. Wm. B. Rogers, he concluded that beds of magnesian limestones, suitable for making hydraulic lime or cement, exists in Botetourt, Roanoke, Montgomery, Wythe, Smyth and Washington; and subsequent inspection proves their existence in all the Valley counties here treated. For cement purposes, the carbonate of magnesia should be found to exist in the stone as compared to carbonate of lime in a proportion of three to two. For a pure and good limestone, suitable for making a good quality of lime, probably the dark blue limestone, of which there is so much in all these counties, has no superior. It usually contains about 82 to 85 per cent. of carbonate of lime according to Prof. Rogers, and yields 47 per cent. of lime, when properly burnt. There are many ledges of very dark limestone, passing near any of the courthouses, which are situated about the middle of the Valley, which, when polished, have the appearance of black marble of fine texture.

In addition to these uses mentioned, the gray and darker limestone ledges of sufficient thickness, of which there are many, are employed universally in building every description of masonry—houses, foundations, bridges, walls, &c. To all these valuable features must be added the many large and constant springs that flow from the limestone strata—many of them of a thermal character of excellent merit.

Then, as you enter the line of purely Trenton limestones, usually just northwest of the middle of the Valley, there is a persistent ledge of chert in all the counties, which at intervals, presents to view large bodies of a semi-magnetic iron ore of great purity and possible usefulness; at several points in Botetourt, Roanoke (near Red Sulphur Springs), Montgomery, Wythe, Smyth and Washington (at Galahers & Tilson's), yielding often over 60 per cent. of met. iron and about 0.038 phosphorus. Along and near to these rocks are valuable and extensive deposits of barytes, found in large bodies in Smyth and other counties.

Beyond this line northwest is a line of No. IV limestones, which yield excellent variegated marbles, and may be found in nearly all the counties where the order of position is not broken by cross flexures.

In this line are large deposits also of brown iron ores; and then as you approach the northern margin of the Valley, a fault occurs, which brings a downthrow of sub-carboniferous rocks against the rocks just described.

In fact, on that side, in all the southwestern counties, there is a much wider margin of sub-carboniferous rocks than had hitherto been accredited to the region. In this line of rocks, the coal just north of Catawba creek, in Botetourt, is found; that in Roanoke, on Tinker's creek, and in Brushy, near Roanoke Red Sulphur Springs; in Montgomery county, at Prices mountain on both sides of the anticline, and in Brushy mountain, in deposits over 7 feet thick; in Pulaski, at Tyler's Belle Hampton mine, at Altoona mines, in two veins of 21-3 feet thick, and in much of that region in Pulaski, extending from Pulaski station, westwardly along the Norfolk and Western railroad to the Wythe county line, on both sides of the railroad.

In Wythe county this coal exists in Little Brushy mountains, its entire length in the county, as at Stony Fork and other places, and comes up near Clark's Summit and Max Meadows in a repetition of the strata in valuable deposits. In Smyth county it is also, observed on the north margin of both the great Valley and Holston valley, north of the gypsum beds. Overlying the coal beds, geologically, is a band of gray and red shales and sandstones separated from the coal by valu-

ble deposits of iron ore, and over the red shales are limestones of some thickness, in which are very extensive deposits of iron ores. The sandstones of this belt yield a ledge or two, excellent for building purposes; being also soft in quarry are easily mined, while just under the coal is a band of excellent fire-proof sandstones, proven good, also, in use, as grindstone grit.

Along this general line (about the fault) are some of the great mineral springs of these counties, such as: Botetourt springs, Roanoke Red Sulphur springs, Montgomery Yellow and White Sulphur springs, Chilhowie springs of Smyth, Washington springs near Glade spring and the Seven springs of Washington county, from which is made the valuable Seven spring iron and alum mass; Mangel's springs of Washington, and Holston springs of Scott county; while Alleghany springs of Montgomery county are situated south of the great lead and zinc zone, and Daggers springs of Botetourt are in a line far to the north.

Then, the last to be mentioned, but far from the least of the Valley's features, are the gypsum and salt of the north fork of Holston river, in Smyth and Washington counties. They lie along the north side of the great fault that marks the line of that fork of Holston river, and are really a part of the sub-carboniferous system of rocks.

This massive deposit of gypsum, more than 600 feet thick, at Stuart and Buchanan's Cove, in Smyth county, shows conspicuously; also, at the Pearson Beds and at Saltville, in Smyth county, and at Buena Vista, in Washington county. Many explorations and long continued examinations lead to the belief, at last, that these vast gypsum deposits, showing for about 20 miles length, really compose two or more regular strata of the sub-carboniferous rocks, and have a width, exposed and concealed, of one mile or more from the fault northward. It has been mined to a depth of about 180 feet at Saltville and Buena Vista, and its general composition by analysis is as follows: Lime, 32.50; sulphuric acid, 46.50, and water 20.50, showing traces of magnesia, alumina and iron.

The rock at Saltville, possibly 200 feet thick by an unknown length, may have a different origin from that of the gypsum—possibly may be due to deposition in a secure basin, from brines flowing constantly from the salt-bearing groups of rocks known to be in the sub-carboniferous series. The brines are of an unusual degree of purity; have been drawn upon for many years by the salt works of Saltville, making over 500,000 bushels of salt annually, without any appreciable diminution of either strength or quantity. Railway communication is now by means of the Norfolk and Western railway—the upper or Buchanan and Pearson plaster deposits having railway communication. Altogether, “the Valley” presents no more wonderful feature! With unlimited basins of gypsum and salt, inexhaustible deposits of iron, lead, zinc and coal, inconceivably vast ledges of limestone, whose unequal solubility here and there have resulted in caves of marvelous beauty; thermal and medicinal springs of high therapeutical and curative value; an atmosphere of wonderful purity and power of invigoration, and a soil of great fertility, it may well anticipated that “*The Valley*,” besides becoming the home of extensive and varied industries, will be a sanitarium more numerously attended in the future, and is now a granary of unlimited natural capacity.

Before dismissing “the Valley Division,” it may be well to call attention to its great capacity as a fruit producer. Its orchards and gardens show that all fruits common to this latitude not only flourish well, but yield largely, with less average failures than is common in many other localities.

COUNTIES OF THE GREAT VALLEY.

NATURAL SUB-DIVISIONS.	COUNTIES.
The Shenandoah Valley.....	{ Frederick. Clarke. Warren. Shenandoah. Page. Rockingham. Augusta.
The James River Valley.....	{ Rockbridge. Botetourt.
The Roanoke Valley.....	{ Roanoke.
The New River or Kanawha Valley.....	{ Montgomery. Pulaski. Wythe.
The Holston or Tennessee Valley.....	{ Smyth. Washington.

VALLEY BY COUNTIES.

AUGUSTA

is chief among the counties of the famous "Valley of Virginia," second in size, containing more than a thousand square miles = 666,618 acres, assessed at \$8,165,143, and first in population, containing 34,645. The surface is uneven and mountainous on its east and west boundaries, which are respectively the Blue Ridge and "Great North" mountains, an outlying range of the Appalachian chain. The valleys between these mountains are extensive and very fertile, embracing the head waters of the Shenandoah river and that part of the "Valley of Virginia" at its greatest width. It is about thirty-five miles long and thirty wide, with an undulating surface abounding in hills, fertile and well watered valleys, with fine water-power.

Augusta has a variety of soils, producing wheat, corn, oats, rye, barley, buckwheat, potatoes, turnips, beets, &c. ; also the various grasses for hay and pasturage. This county is noted for its fine horses, fine cattle, hogs and sheep, the latter having greatly increased and improved since the enactment of "dog law" for their protection. This county is notable also for the number and excellence of its flouring mills, propelled by the finest water-power.

There are many mineral springs of excellent water of their kinds, among them the Stribbling Springs, the Variety, Crawford, the Lone Fountain, Chalybeate, Lithia, &c., consisting of a great variety of waters much thought of by the people and much resorted to by strangers. Many minerals are found in this county, such as iron ore (brown hematite and specular), manganese in large quantities (which is mined), marble, kaolin, with a large factory awaiting capital to operate it, and coal of an anthracite character.*

There are six or more iron furnaces, besides a considerable number of forges, which have been operated in this county on the vast deposits of iron ores, and they are making iron cheaper than it can be made North and West. The various fruits of this section succeed admirably in this county.

Timber : oaks of the several kinds, white oak being very abundant and of superior quality, hickory, chestnut, walnut, poplar, maple, beech, dog-wood, white-ash, locust, pine (white and yellow), cedar, &c. Tanner's bark may be had in large quantities, and staves, hoop-poles, &c.

* Mr. Charles Grattan, Superintendent of Schools, who has written me a very excellent description of Augusta, and from which I have obtained some of the above information, says of this coal: "At Dora, where a shaft has been sunk, coal is taken out not inferior to the best Pennsylvania anthracite, is wagoned eighteen miles, and undersells the northern coal. There is no doubt North Mountain is full of it." I regret that want of space prevents me from publishing Mr. Grattan's letter in full.

The Chesapeake and Ohio railroad passes through the county, and is intersected at Staunton by the Valley branch of the Baltimore and Ohio railroad, connecting it with Baltimore in nine hours and with Washington in seven hours. And the macadamized "Valley Pike," an excellent road, gives ready communication to various markets east, west and north. The Shenandoah Valley railroad also passes through the county, crossing the Chesapeake and Ohio railroad at Waynesboro'. Thus the county is traversed by three great lines of railroad, one from east to west and two from north to south.

The capital or county seat of Augusta is Staunton. Here is the point of intersection of two trunk lines of railroads, viz: The Chesapeake and Ohio and the Valley branch of Baltimore and Ohio railroads. Here are the Western Lunatic Asylum, and the Asylum for the Deaf, Dumb and Blind. Also four prosperous Female Colleges, viz: The Virginia Female Institute, (Episcopal); the Wesleyan Female College, (Methodist); the Augusta Female Seminary, (Presbyterian); and the Staunton Female Seminary, (Lutheran). Here also are an iron foundry, wagon and implement factories, and numerous shops, &c. Banks, churches of all leading denominations. An annual Agricultural Fair is held here.

There are many small towns and villages in the county. Waynesboro' at junction of the Shenandoah Valley and the Chesapeake and Ohio railroad, is well situated. The county is well supplied with churches and schools. If Augusta county had the same density of population as Rhode Island, it would sustain 272,000 people, and it is well able to do so.

The people of Augusta are intelligent, industrious, thrifty, sober, economical, and homogeneous, being largely of Scotch-Irish parentage.

Through the county stretches a band of *magnesian* limestone, and it is found near Wier's Cave, west of Waynesboro', northwest of Staunton, near the base of Little North mountain, and numerous other places. Its *hydraulic* character has been well tested. This cement has recently been found on the farm of John L. Peyton, and is pronounced by competent judges a first-class article. This limestone, from which *hydraulic cement* is made by burning, constitutes an important part of the formation of the Valley, both from its extent and economical value. It is usually of bluish gray, sometimes blended with yellow or brown, and sometimes dark blue, but the best guide to its recognition is the *dullness* of the surface even when freshly broken, and the absence of fine grain of most limestones. Those in Augusta contain about from 44 to 53 per cent. of carbonate lime, and 33 to 35 per cent. carbonate magnesia, and 2 to 7 of silica. The other constituents are generally alumina and oxide of iron in moderate proportions. A New York marble firm leased the Craigsville marble quarry in this county (encrinal marble, now in much demand), and have worked it largely; the deposit is believed to be inexhaustible. The marble is represented as being very superior, finishing up in beautiful style, being more durable and smoother than the Tennessee marble, and equal to much of the Italian marble which is used on the finest furniture. A quarry of superior slate has been opened north of Staunton. These slate quarries are largely worked now, and are turning out mantels, hearths, wainscoting, steps, &c. The farmers have a fine home market in the city of Staunton, with its numerous schools, manufactories, and the State institutions, which alone disburse \$100,000 annually.

Augusta county was represented at the New Orleans Exposition in her mineral resources by the following specimens :

From Professor Fontaine.

1. *Brown Hematite Iron Ore*, from Kennedy tract, foot of Blue Ridge.
2. *Jointed Sandstone*, from Blue Ridge, near Black Rock spring.
3. *Ochre*, from Samuel Steele's, near Fishersville, in large amounts.
4. *Mica Slate*, with clorite spots, from west end of Rockfish Gap tunnel, in considerable amounts.
5. *Stalactitic Marble*, from near Greenville.
6. *Quartz Crystals*, from near Waynesboro'.
7. *Ochre*, from Samuel Steele's, in large quantities.
8. *Manganese*, from Fauver beds, $1\frac{1}{2}$ miles from Vesuvius station, Shenandoah Valley railroad.
9. *Brown Hematite Iron Ore*, from same locality.
10. *Ochre*, from Samuel Steele's, near Fishersville.
11. *Brown Iron Ore*, limonite, fibrous, radiated; two lumps of 50 pounds each, from mine bank in Potsdam No. 1, near head of S. river of the James in Blue Ridge.
12. *Iron Ores*, brown hematite and red shale, from mines of Buffalo Gap furnace.
13. *Pig Iron*, from Buffalo Gap furnace.
14. *Limestone*, Lower Helderberg No. VI, from quarry of Buffalo Gap furnace.
15. *Iron Ore*, from banks in No. VII, Oriskany, that supplies Elizabeth furnace at Ferrol station, Chesapeake and Ohio railway.
16. *Limestone*, from No. VI, at Elizabeth furnace.
17. *Marble*, polished slab and blocks, from quarry of Coral Marble Co., in Lower Helderberg No. VI, on Chesapeake and Ohio railroad, near Craigsville.
18. *Brown Iron Ore*, from old Mossy Creek Mines, in formation No. II.
19. *Marble*, encrinal, from land of Martin K. Garber, Marble Valley, Big Calf Pasture river.
20. *Manganese Ore*, pyrolusite, mammillary forms, from Crimora Mines.
21. *Brown Iron Ore*, from Kennedy mine.
22. *Kaolin*, washed China clay, from beds of Virginia China Clay and Fire Brick Co.
23. *Fire Bricks*, of high grades, for all purposes, from above company.
24. *Iron Ore*, from deposit in Valley limestone No. II.
25. *Stalactites and Stalagmites, Calcepar*, encrusted articles, &c., &c., from Wiers' Cave.
26. *Tufaceous or Calcareous Marl*, recent deposit from waters of Lewis creek, near Staunton, with cast of leaves now growing along the creek.
27. *Sand Rock*, from No. IX Catskill, from summit of Mount Rogers 4500 feet above tide on line of Chesapeake and Ohio railway.
28. *Anthracite Coal*, from Dora coal mine, from formation No. X.
29. *Slate*, "slickensided," or polished by friction of rocks in a great down throw of geological formations; from Dora coal mine.
30. *Two large Stalactites and one Stalagmite*, from the Fountains Cave.
31. *Iron Ore*, limonite, cubical, black, 12" by 16," from Elizabeth furnace ore beds, in Oriskany No. VII at Ferrol station, Chesapeake and Ohio railway.
32. *Argentiferous Galena*, (lead and silver) from land of M. K. Garber.

33. *Spiegeleisen*, from Edgar Thompson Steel Works, Pittsburg, Pennsylvania, made from manganese, from Crimore mine on Shennandoah Valley railroad, in this county.

34. *Flaggy Limestone*, from No. III on Trenton ; from Long Glade.

35. *Slate*, from "Redbud" quarry in Formation No. III, Hudson River.

BOTETOURT

was formed in 1770 from Augusta. It is 44 miles long, and about 18 miles wide, and contains 372,627 acres, valued at \$2,308,702. Population, 14,809.

This is one of the finest counties of the James River Valley, and is noted for its fine grass lands and fat cattle. The surface is rolling, and parts of the county are mountainous. The soil is fertile being formed from limestone rocks.

The productions are tobacco, wheat, corn, oats and cattle, forming a large aggregate of value. This is a fine fruit county, extensive areas being devoted to fruit growing, and much fruit annually canned and evaporated. There are several large canning establishments in the county. James river flows through its central parts, and, together with its tributaries, give abundant water-power.

It is traversed by the Richmond and Alleghany railroad following the banks of the James, a distance of forty miles from east to west, and by the Shenandoah Valley railroad from northeast to southwest; and the Norfolk and Western railroad crosses the southeast corner. These roads give convenient access to market from all parts of the county, and have been the means of developing some of the finest iron ore deposits in the State, immense in extent, indeed practically inexhaustible. Five miles below Clifton Forge depot, near the railroad, and in a very accessible situation, is a surface deposit of brown hematite ore, forming a solid mass 300 feet long, 60 feet wide, and 25 feet high. This ore yields by analysis 55 per cent. of superior iron. Limestone in the same region is abundant and of excellent quality. "The Arcadia Iron Works employ 125 hands; they use specular ore, yielding 60 to 65 per cent. metallic iron."—*Fincastle Herald*. "The operations of this company have fully proven the existence of four or more continuous beds of specular iron ore (red hematite), averaging three feet in thickness, that outcrop in northeast and southwest lines in the western or primordial Blue Ridge for nine miles, from near Buchanan to the northeast, in a three-mile wide belt of mountain chain, parallel with and adjacent to James river. Many thousand tons of this ore, proven by analysis and furnace tests to be of good quality, have been mined from the mountain sides, adits, and open cuts. Vast quantities of this specular ore can here be cheaply mined, while from the western side of the same belt, almost on the banks of the James in its eastern bends, brown hematite ore (limonite) can be had in abundance from the broad band of that ore that here, as elsewhere, accompanies and caps the Potsdam. I have never before seen such a development of specular ores in Virginia, and am satisfied that the inducements offered by their abundance and consequent cheapness in the immediate vicinity of four or five other varieties of ores, that are also abundant, and at a moderate distance from the best coking coals of the great Ohio basin, must go far towards making Botetourt one of the great iron-producing centres of the country. * * * No region can furnish more cheaply than this any or all the varieties of limestone needed for fluxing in blast furnaces; some of these contain 98.30 per cent. of carbonate of lime, others abound in alumina. Marbles of various kinds abound among these lower silurian rocks."—*The Virginias*.

A fine grained gray marble, solid and massive, is found near Buchanan in a bed fifty yards wide. The Brown hematite (limonite) iron ores have not only a remarkable development in Botetourt county, but they are so disposed in thick, continuous beds, and extended outcrops, that they can be cheaply mined on a large scale. These ores are found in nearly all the mountains of the county. Specular ore has been discovered near Buchanan, one vein fifteen feet thick and analyzing 65 per cent. pure metal. In summing up an account of his exploration of the ores belonging to the Arcadia Iron Mining Company, in this county, Professor J. L. Campbell gives the following as his opinion of the *quality*, *quantity* and *accessibility* of these ores: "As to *quality*, the chemical analyses and furnace-tests speak most favorably. As to *quantity*, * * ten generations cannot exhaust the supply. As to *accessibility*, the beds are very favorably situated for mining, either by open cuts or tunnels. The numerous ravines that cut across the strata give natural openings at which to begin mining operations, and as these ravines all descend towards the river, all the ore can be transported by a down grade to the point of shipment and use. The Arcadia Iron Works were sold January 6, 1880, to a Pennsylvania company for \$125,000. The Salisbury Manufacturing Company has recently put its furnace in operation on the Richmond and Alleghany railroad. The Roaring Run furnace property, about 10,000 acres of iron land, on the Richmond and Alleghany railroad, promises to be one of the leading iron-producing properties in the State. They are raising a large quantity of ore, and expect to erect charcoal furnaces for the manufacture of charcoal iron of high grade."

Botetourt has on exhibition at the New Orleans Exposition the following samples of minerals:

1. *Manganese*, from H. C. Snyder's land, three miles from Buchanan.
2. *Red-Shale Iron Ore*, from Clinton, No. V, beds in Purgatory mountain, three quarters of a mile from Buchanan station, Richmond and Alleghany railroad. This specimen is from a pile of 300 tons, now mined and stocked at one point on an extensive outcrop that has been uncovered at six places, and shows a regular thickness of from 18 to 28 feet.
3. *Manganiferous Iron Ore*, from same locality as preceding.
4. *Red Specular Iron Ore*, from Arcadia furnace property, 4 miles east of Buchanan, from Potsdam No. 1 beds.
5. *Manganese*, from Houston iron mine, near Houston station, S. V. R. R.; used for Spiegel at Cambria Works, Johnstown, Pa.
6. *Marble*, from Silurio-Cambrian beds, No. II, from Thomas', on Catawba creek, 3 miles east from Roanoke Red Sulphur Springs.
7. *Calcite*, from line of S. V. R. R., 2 miles east from Buchanan.
8. *Pyrite*, from Lunsford's, near Bonsack station, N. & W. R. R.
21. *Cellular Brown Hematite Iron Ore*, from No. III, Hudson River (?) shales, from the thick, regularly stratified beds of Old Catawba furnace mines.
22. *Massive Brown Hematite Iron Ore*, from same mines as above.
23. *Light Gray Limestone*, No. II, from quarry on S. V. R. R., below Buchanan; used for flux at Crozer furnace.
24. *Blue Limestone*, No. II, from near Blue Ridge Springs, N. & W. R. R.; used for flux at Crozer furnace.
25. *Limonite*, brown iron ore, from Houston mines, near Houston station, S. V. R. R.

26. *Limonite*, brown iron ore, from Upland mine of Crozer Steel and Iron Co., near Blue Ridge Springs, N. & W. R. R.
28. *Marble*, from G. Gray.
28. *Red Iron Ore*, from G. Gray.
29. *Pyrites*, from G. Gray.
30. *Limestone*, from quarry of Indian Rock Lime Works—Edward Dillon, proprietor.
31. *Unslaked Lime*, from above.
32. *Slaked Lime*, from above.
33. *Limonite Iron Ore*, from Purgatory Mountain mine, near Saltpetre Cave station, R. and A. R. R.
34. *Pig Iron*, No. I grade, charcoal, from Salisbury furnace, near Salisbury station, R. and A. R. R.
35. *Limonite Iron Ore*, from Rocky Gully ore bed, Purgatory mountain.
36. *Limonite*, brown iron ore, from near Eagle Rock station, R. and A. R. R. Analysis by Dr. A. Koenig of run of mine gives 47 per cent. metallic iron, low silica, and only trace of manganese.
37. *Manganiferous Iron Ore*, same locality as above.
38. *Limestone*, containing 97.5 per cent. carbonate lime; abounds at same locality.
39. *Limestone*, samples from Lower Helderberg, No. VI, Prices' Bluff, R. and A. R. R.
40. *Limonite Iron Ore*, from Oriskany No. VII, mines of Wilton furnace, east slope of Rich-patch mountain.

The following is taken from the list of Roanoke county minerals, as they plainly belong to Botetourt:

16. *Iron Ores, Limestone and Pig Irons*, from Crozer furnace, Roanoke city, from Mr. Samuel Crozer, president, and Col. D. F. Houston, superintendent, viz:
 1. *Limestone*, from Buchanan, Botetourt county, on line of S. V. R. R.
 2. *Limestone*, from near Blue Ridge station, Botetourt county, N. & W. R. R.
 3. *Limonite Iron Ore*, from Houston mines, near Houston station, S. V. R. R., Botetourt county.
 4. *Limonite Ore*, from Upland mines, near Blue Ridge station, Botetourt county.

CLARKE.

Clarke county was formed from Frederick in 1836. It is seventeen miles long and about ten wide. The Shenandoah river flows through the eastern part of the county, at the foot of the Blue Ridge.

The surface of the main part of the county, lying between the Shenandoah and Opequan rivers, is gently undulating, well drained and having a soil of unsurpassed fertility, and peculiarly adapted to the growth of wheat and corn, clover and timothy. Blue grass is indigenous, and soon forms, on uncultivated fields, a sod equal to the far-famed fields of Kentucky. The land east of the Shenandoah river is mountainous, and generally covered with valuable timber of pine, oak and chestnut. When cleared the mountain sides produce blue grass, affording fine pasture for sheep and cattle. Sumac grows in abundance on the mountain fields, and affords a source of considerable income to the inhabitants.

It belongs to the limestone formation; the limestone being readily obtained on every farm for building purposes and for burning into lime. Iron ore of rich

character is found in great abundance, and is now being mined and shipped to the furnaces of Pennsylvania. Copper and lead are also found on the mountain sides. Numerous flour mills are located in the county, manufacturing flour extensively for the Baltimore market and for home consumption.

Wheat, corn and hay are the special productions for market, with all kinds of fruits of this latitude for home consumption and apples for export.

Large numbers of cattle, sheep and hogs are grazed and fed, and sold in Baltimore, Philadelphia and New York markets.

The climate is healthy; the people intelligent and enterprising; the farms well improved with buildings and fencing of the best character; and the system of cultivation thorough and profitable.

Churches of the various Christian denominations are found in the villages and in the country, and public schools in sufficient number to meet the demands of the people.

Berryville, the county-seat, is a flourishing town of 1,500 inhabitants, beautifully situated on the Shenandoah Valley railroad. It contains seven churches, a graded school of high character, one bank, and a number of mercantile establishments. The other villages in the county are Millwood, Boyce and White Post.

The Shenandoah Valley railroad, extending from Hagerstown, Md., to Roanoke, Va., passes through the county from north to south. The Valley branch of the Baltimore and Ohio railroad passes through the northwestern part of the county; and the Washington and Ohio railroad, when completed, will pass through from east to west. Five Macadamized turnpikes traverse the county. Population in 1880, 8,975.

Farms, 109,343 acres, assessed at a valuation of \$2,842,021.

Clarke county has the following minerals on exhibition at the New Orleans Exposition:

1. *Limonite Iron Ore*, from the "Berryville" mines, Mine No. 1, the "Birchel."
2. *Limonite Iron Ore*, from Mine No. 2, the "Morgan."
3. *Limonite Iron Ore*, from Mine No. 3, the "Moore."
4. *Limonite Iron Ore*, from Mine No. 4, the "Wilson."
5. *Limonite Iron Ore*, from Mine No. 5, the "Griffith."
6. *Kaolin*, from Carter Shepherd's farm, west of Shenandoah river, at Castleman's ferry.
7. *Iron Ore*, from Dr. Foster Burchell's, 3 miles south of Berryville.
8. *Iron Ore*, from C. H. Castleman's, west of Shenandoah river, at Castleman's ferry.
9. *Iron Ore*, from J. K. Louthan, 2 miles west of Berryville.
10. *Iron Ore*, magnetic, from Major T. L. Humphreys.

FREDERICK

was formed in 1738 from Orange. It is 25 miles long and about 18 miles wide. It is the northernmost county of Virginia since the partition of the State, and one of the finest of the famed Valley of Virginia, and is noted both for its fine lands and good farming.

The surface is undulating, and the soil very productive. The eastern portion has a belt of gray slate land from two to six miles wide, and running the entire length of the county on the line of Clarke.

This soil produces fine crops of grain and grass.

The timber here is pine, oak, hickory and ash.

The limestone belt, which is four to eight miles wide, is one of the finest and most productive sections in the State.

West of this valley is the "Little North mountain"; between it and the "Big North mountain" is a valley about six miles wide of limestone land. In this valley are some valuable lands and fine farms.

The timber in the limestone belts consist of finely grown trees of oak, hickory, walnut, ash, locust and elm.

Travertine marl exists in the limestone valleys,

In the North mountain are extensive deposits of iron ore of good quality, which has been successfully worked with several furnaces. Coal of anthracite character is also found.

West of North mountain the land is generally a gray slate formation, which produces well.

Rock Enon Springs, on the west of North mountain, and Jordan White Sulphur Springs, five miles from Winchester, have an extended reputation for the cure of disease, and are liberally patronized. The water of the Jordan Springs is very much like that of Greenbrier White Sulphur, and it is used in the same class of diseases.

The chief productions of this county are wheat, corn, rye, buckwheat, oats and the grasses. Fruits succeed well, the apple particularly.

Winchester is the largest town, and has a population of 4,958 (in 1880). There are several smaller towns, beautifully located on the banks of the valley streams which flow from the adjacent hills and mountains.

Population, 17,654 (including Winchester).

Number of acres of land, 268,950; assessed at \$3,454,408.

In this county are some of the best lands of the Shenandoah Valley. Soil, climate and air combine to make this one of the richest and healthiest regions in the world, and it abounds in clear streams of running water. Within the county of Frederick, and at an average distance of eight miles from Winchester, are thirty-seven flour mills, the largest of which is the Baker steam mill, which has a capacity of 175 barrels of flour per day. There are seven woolen mills, eight tanneries, one steam paper mill, one bone dust and fertilizer factory, one sumac and bark mill, two iron foundries, a shoe factory, six glove factories—"the largest of which works from 200 to 300 hands"; "ten cigar factories, working from 5 to 40 hands each, three box factories, three carriage factories, one wheat-fan factory, several cabinet factories, one agricultural implement factory, several saw and planing mills, and quite a number of minor operations of various kinds." "The county has no public debt, and its parish farm is about self-supporting." "It has two banks—the Shenandoah Valley National, capital, \$100,000; surplus, \$60,000; and the Union (State), capital \$50,000." There are three excellent female seminaries—Episcopal, Methodist, and Presbyterian—and one male academy, located in Winchester, and a flourishing Normal school in Middletown. The new public school building in Winchester is an ornament and credit to the city. The National and Stonewall cemeteries are within the corporate limits of Winchester. Three weekly newspapers and one monthly literary paper are published within the county.

The Valley branch of the Baltimore and Ohio railroad runs through the county, and is a great through route for travel and traffic from the east and northeast to the South and Southwest. The Washington and Ohio railroad, when extended, will cross this county via Winchester from east to west.

MONTGOMERY

was formed in 1776 from what was then called Fincastle district. It is about 22 miles on each of its irregular sides, and contains 247,600 acres of land, assessed at \$2,670,000. Population, 16,717.

The surface is rolling through the centre and southern portions, and mountainous in the northern and western parts. The soil is a rich limestone well adapted to grain and tobacco, and all the grasses grown in Virginia; so that for grazing and stock-raising it is unsurpassed.

Montgomery enjoys a delightful and healthy climate, and is a most desirable part of the great Valley of Virginia.

Timber is abundant; oak of different varieties, chestnut, walnut, hickory, elm, poplar, &c.

It is drained by New river and the headwaters of the Roanoke, which are utilized to a considerable extent in manufacturing enterprises of various kinds.

The Norfolk and Western railroad passes through the centre from northeast to southwest; a branch road from the Norfolk and Western runs along the west line a short distance on its route to the Pocahontas coal mines, in Tazewell county.

The minerals found here are iron ores, gold, galena, zinc, copper, manganese, coal, slate, millstone, and limestones. Much of this mineral wealth is now being developed and gives employment to capital and labor. There are several mineral springs in the county, as the "Montgomery White Sulphur," the "Alleghany Springs," and the "Yellow Sulphur Springs," near the Norfolk and Western railroad.

Christiansburg, the county seat, is a thriving town of 2,000 inhabitants. The Virginia Agricultural and Mechanical College is located at Blacksburg, in the midst of a fine farming country, surrounded by varied and beautiful scenery. This institution is doing an admirable work in educating the young men of this and other sections of the State.

MONTGOMERY COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Limonite*, from large deposit on the Spindle lands, near Alleghany Springs, near Norfolk and Western railroad, from F. J. Chapman.
2. *Native Gold*, from Stone's, from C. R. Boyd.
3. *Gold Bearing Quartz, Placer Gold, and Gold Gravels*, Brush creek, from W. H. Harman.
4. *Galena*, from near Alleghany Springs, from Prof. Fontaine.

The following from Major John T. Cowan, Cowan's Mills P. O.:

5. *Millstone Grit*, suitable and used for millstones, from Brushy mountain.
6. *Coal*, semi-anthracite, from McCoy's mine on northeast bank of New river, Brushy Mountain.
7. *Slate*, from Poverty Valley, Tom's creek, eastern slope of Brushy mountain.
8. *Red Shale Iron Ore*, No. V, from Webb Mine in Gap mountain, used in Sinking Creek Iron Works.

From Virginia Department of Agriculture.

9. *Lead and Zinc Ore*, from Geo. W. Anderson. Assays, 32.78 metallic lead, and 24.88 metallic zinc.

10. *Mispickel or Arsenical Pyrites*, from W. J. Guerrant.

PAGE

was formed in 1831 from Shenandoah and Rockingham. The whole county is a valley twenty-five miles in length and about eleven miles wide, with the Shenandoah river running through its entire length, and contains 193,119 acres, valued at \$1,608,454. Population, 9,970. The surface of the broad and fertile valley is gently undulating, and rises gradually to the summits of two low mountain ranges which form its east and west borders, the Blue Ridge on the east and Massanutton on the west.

The soil is a rich limestone of unsurpassed productiveness, admirably suited to grain and grass.

Page county is traversed in its entire length by the Shenandoah Valley railroad, which runs through the centre and affords transportation convenient to all parts of the county. Since the construction of this road the development of the county has been very rapid.

Valuable timber of many kinds, as oak, pine, locust, chestnut, walnut, ash, and poplar is abundant. The minerals are iron ores in vast quantities, ochre, manganese, copper, limestone, some of it magnesian, and travertine marl.

Near Luray is a beautiful cave with an endless succession of extensive chambers ornamented with numerous stalactites and stalagmites. This is numbered among the noted caverns of the world, and attracts from all parts of the country thousands of visitors curious to examine its wonders, which surpass those of any other known to man. It is now fitted up with electric lights and all conveniences for exhibition.

Luray, the county seat, is a beautiful town, and one of much commercial importance, being the emporium of this rich Page Valley, and on the line of the great Shenandoah Valley railroad.

PAGE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

The following specimens were contributed by Mr. E. A. Randle, of Luray :

1. *Brown Hematite Iron Ore*, from "Bonanza" Mine, of Harmer, Randle & Co.
2. *Brown Hematite*, from "Audenried" Mine, of Va. Ore and Iron Co. of Luray.
3. *Brown Hematite*, from "Shank" Mine, of A. E. Randle.
4. *Brown Hematite*, from "Weatherhols" Mine, of A. E. Randle.
5. *Brown Hematite*, from "Pipe Ore" Mine, of A. E. Randle.
6. *Brown Hematite*, from "Williams" Mine, of A. E. Randle.
7. *Brown Hematite*, from "Murray" Mine, of A. E. Randle.
8. *Brown Hematite*, from "Piney Mountain" Mine, of Harmer, Randle & Co.
9. *Brown Hematite*, from "Printz" Mine, of Harmer, Randle & Co.
10. *Brown Hematite*, from "Vulcan" Mine, of Maris & Randle.
11. *Brown Hematite*, from "Honey Run" Mine, of Harmer, Randle & Co.
12. *Brown Hematite*, from "Housen" Mine, of Harmer, Randle & Co.

13. *Brown Hematite*, from "Farmazanta" Mine, of Harmer, Randle & Co.
14. *Brown Hematite*, from "Dovel" mine of Harmer, Randle & Co.
15. *Brown Hematite*, from "East Liberty" Mine, of Miles & Randle.
16. *Epidote*, occurs in Syenite at Milam Gap on west side of Blue Ridge, Prof. Fontaine.
17. *Iron Ore, Limonite*, from "Cornelia" Mine, near Rust Siding, S. V. R. R., B. C. Rust, proprietor.
18. *Limonite*, from "Strickler" Mine, near above, same owner.

From Collection of N. & W. and S. V. R. R.

Iron Ore, from "Beverly" Mine, one mile southeast of Ingham station, S. V. R. R.

Iron Ore, from "Rust" Mine, two miles northwest from Kimball station, S. V. R. R.

19. *Limonite*, from "Beverly" Mine.

20. *Ochre*, yellow, crude, from Oxford Ochre Co.

21. *Ochre*, yellow, ground, from mills of Oxford Ochre Co.

PULASKI

was formed in 1839 from Wythe and Montgomery. It is 25 miles long and 18 miles wide. The surface in some parts broken and in others level. The soil is very good, and adapted to grain and grazing.

Population, 8,752. Number of acres of land 211,073, assessed at \$1,731,411.

The county is situated in the famous Southwest Valley, and is noted for its rich hay and grass, and fine stock.

Its increased railroad facilities and mineral developments have been greater in the last year or eighteen months than any county in the State. From the Norfolk and Western railroad, which is the main line running through the county from east to west, two important branches have been thrown out—one starting from New River Bridge and extending a distance of 84 miles into Tazewell county, opening up the great Pocahontas or Flat Top coal field; and the other, under construction, leaves the main line at Martin's, now Pulaski city, and extends up the New River and Cripple Creek valleys through Wythe and Grayson counties into North Carolina, and the wealth of iron, lead, copper, zinc, and other ores that will be opened up to market is simply marvelous.

In addition, within the last year the Belle Hampton Coal and Iron Company have built a narrow-gauge road from near Churchwood, on the New River road, to Tyler's Brush Mountain coal mines, a distance of four and a quarter miles, and is mining and shipping a quantity of stove and grate coal that commands the best price of any coal in the State. This company has not been able to supply its demands. They have opened four veins—one 2 feet, one 2½, one 5, and one 3½ feet thick. The smaller vein is the most valuable, and the one principally worked. This vein is about 80 per cent. anthracite, and the others are soft and semi-bituminous.

In 1878 the Altoona Narrow-Gauge road was built from Martin's to their valuable coal fields—a distance of eight miles—and has transported great quantities of coal, which has been used principally in smelting zinc ore at the Bertha Zinc Works, and at the salt furnaces of Col. Geo. W. Palmer at Saltville. Col. Palmer now owns the Altoona railroad, the coal banks, and also most of the Bertha Zinc Works. The Altoona Coal Company have two veins—one 3½ feet thick

and the other about 20 feet. These veins are soft and answer well for smelting the zinc, and use in the salt furnaces.

The coal on Brushy mountain, on which are located the Altoona and Bell Hampton (or Tyler's mines), crops out near the top of the mountain, for a distance of about forty miles—through Pulaski county and east and west into Wythe and Montgomery counties—and lays at a pitch of about 35 degrees, and from the fact that the veins are thrown up again, some miles south on the Tract mountain, in Pulaski, and Prices mountain, in Montgomery—it is believed that the substratum of the whole Valley between is one solid mass of coal. This Valley contains some of the best grazing and grain land in the county. Other openings have been made on the veins of coal mentioned, perhaps the next most important development is by Mr. J. R. Miller, near Martin's station.

There are valuable veins of limestone and fine building stone. Both lime and sandstone, or granite can be gotten, and a fine vein of millstone rock is found on Brushy mountain, near the coal vein. Rock nearly equal to the French burr is gotten out near the Belle Hampton coal banks. There is also on the same mountain a vein from which valuable grind stones are made, and another that furnishes whet stones only surpassed by the genuine Irish hone.

Many different kinds of ores are found in large quantities. The Radford furnace has been in operation for many years. The ore is inexhaustible and of the finest quality. A vein of zinc ore 15 feet thick has been found on the lands of D. S. Forney, and near here are the well known "Bertha Zinc Mines," from which a supply of ore yielding 45 per cent. is drawn for the furnace at Martin's, on the Norfolk and Western railroad, that has a capacity of 1,300 tons of spelter a year. In other places, iron, lead, copper, manganese, &c., are found.

One of the finest bodies of mineral lands in the United States is located partly in the extreme southwestern end of the county, beginning near the junction of Big and Little Reed Island creeks with New River, and extending a great distance up the New River valley. "Boon Furnace" in this county is situated on a bed of this ore, and is regarded as one of the most profitable furnaces in the United States. It continued in operation all through the suspension, although having to haul its product fifteen miles to reach a shipping point.

Valuable lead and zinc deposits occur in juxtaposition to these iron beds throughout their extent. Taken altogether it is unsurpassed by any mineral section in the world.

Great attention is paid by nearly all the leading agriculturists of the county to the breeding of thoroughbred cattle of various breeds, as well as thoroughbred horses, sheep and hogs.

The timber embraces all the varieties found in this section—viz: oak, pine, hickory, poplar, cedar, cherry, ash, walnut, maple, locust, sycamore, etc.

There are many streams, affording valuable water-power for mills and manufacturing purposes. At Snowville, a thrifty little village, they have a woolen mill, a foundry, agricultural implement shops, and other machinery, and at New River Bridge a foundry and spoke factory, and other works are in contemplation in different parts of the county. The little station heretofore known as Martin's is now called Pulaski City, and promises to be quite a place when the Cripple Creek road is completed.

There are two papers published in the county, and as many churches as can be found anywhere to the population. Schools are in a flourishing condition, and to all settlers a cordial welcome is extended by a people rarely equalled for wealth, intelligence and virtuous traits.

Baltimore butchers concede that the beef from this county is among the best grass beef that comes to that market. The production of corn, wheat, rye, oats, buckwheat, grapes, barley and tobacco is equal to the best counties in the southwest.

PULASKI COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Limonite*, from Rich Hill Mine of D. S. Forney, Capt. F. J. Chapman.
2. *Zinc Ore*, from Bertha Mine, Capt. F. J. Chapman.
1. *Brown Iron Ore*, brilliant, from Rich Hill Mine, Capt. C. R. Boyd.
3. *Anthracite Coal*, from Belle-Hampton Coal Company's Mine in Brushy Mountain.

The following from this county are contributed by the N. & W. and S. V. railroads:

Iron Ore, from Radford Furnace on Mack Creek, one and one-eighth miles south of New river.

Iron Ore, from "Johnson" bank of "Reed Island" Furnace, one and a half miles south of New river.

Iron Ore, from "Honaker" bank, one and a half miles southeast of Pulaski Station.

Iron Ore, from "Walton" Mine Furnace.

ROANOKE

was formed in 1838 from Botetourt. It is twenty miles long and about fifteen miles wide, and contains 191,118 acres, assessed at \$2,855,350. Population, 11,847. The surface is undulating, and in parts mountainous, all of its boundaries being crests of mountain ranges. This is one of the upper counties of the Valley of Virginia, and the streams flowing from it run in various directions, some northeast into the James, while Roanoke river, the chief stream in the county, flows southeast.

The soils of this county are generally of excellent quality, and are well adapted to the cereals, grasses, and tobacco. Besides these crops, large herds of fat cattle and sheep are marketed from this county. This is a fine county, the best lands being held at very high figures. The transportation facilities are good, and are furnished by the Norfolk and Western railroad, passing through it from east to west, and by the Shenandoah Valley railroad passing down the valley to Roanoke, its point of junction with the Norfolk and Western.

Salem, the county seat, is prettily located on Roanoke river and the Norfolk and Western railroad. Roanoke, the southern terminus of the Shenandoah Valley railroad, is one of the most prosperous towns in the Valley, and is an important centre of trade and manufacturing industries, with large iron furnaces and tobacco factories. Within three or four years it has grown from a small village to a town of six thousand inhabitants.

The minerals of the county are iron ores in great abundance and purity, coal, slate, and limestone. There are several mineral springs, the waters of which are highly recommended. At Botetourt Springs is located Hollins Institute, a female school of high grade.

ROANOKE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From F. J. Chapman.

1. *Limonite*, cellular, brown iron ore, from Poor mountain mine No. 3.
2. *Limonite*, massive, brown iron ore, from Poor mountain mine No. 1.
3. *Limonite*, clay iron ore, from Poor mountain mine No. 4.
4. *Limonite*, massive black iron ore, from Starkey mine No. 1.
5. *Limonite*, cellular, brown iron ore, from Starkey mine No. 2.
6. *Limonite*, cellular, brown iron ore, from Hudson Shales No. III from North mountain.
7. *Hematite*, massive red iron ore, from Catawba mountain, near Brand's.
8. *Hematite*, massive red iron ore, from middle ridge of Catawba mountain range, near preceding.
9. *Semi-Anthracite Coal*, from Vespertine, No. X, bed in Catawba mountain, extending over 12 miles.
10. *An Old Miner's Sledge*, found in Starkey mine No. 4, where it has lain since 1813, when old "Black Creek" furnace was washed away. Cast directly from the furnace using the Starkey ore.
11. *Marl*, tufaceous, from McCormick's on Catawba creek, 6 miles southwest from Roanoke Red Sulphur springs.
12. *Limonite*, from Potsdam Shales No. 1, from Iron Bluff farm, 3 miles from Rorer Iron company's railroad.
14. *Roofing Slate*, from Catawba valley.
15. *Stalactite, Lime Carbonate*, from caverns near Roanoke Red Sulphur springs. This is from a recently discovered 3 stories-down-cavern in North or Catawba mountain, which has in it rooms over 200 feet long and 100 feet high.
17. *Limestone*, No. II, from Catawba valley.
18. *Limestone*, No. III, from near Salem.
19. *White Sandstone*, Oneida, from Catawba mountain, 5 miles west from Salem.
20. *Purple Sandstone*, Medina, from Catawba mountain, 5 miles west from Salem.
21. *Water*, of Roanoke Red Sulphur springs, 6 bottles with analysis.
22. *Chalybeate Water*, from Roanoke Red Sulphur springs.
23. *A Green Stone*, resembling serpentine, two varieties from quarry of Dr. R. B. Hudson, 4 miles south from Roanoke city; used extensively for sills, caps, &c., in building, and for steps and curbs; soft and dresses easily when first quarried but becomes hard and weathers well.
24. *Brick Clay*, and a raw and burnt brick, from brickyard of J. W. Earmon.

ROCKBRIDGE,

named from its most striking feature, the world-renowned "Natural Bridge," was formed from Augusta and Botetourt in 1778. It is 31 miles in length and 22 wide, and contains 408,961 acres, valued at \$4,151,259. Population, 20,010.

The surface is rolling, and in parts mountainous. The crest of the Blue Ridge forms its southeast boundary; North mountain and Mill mountain are on the west border, and Little North mountain penetrates the northern part.

The region lying between these mountain ranges is undulating and hilly, and has excellent soils formed from limestone, and capable of producing fine crops of tobacco, grain, and all the cultivated grasses.

The elevated mountain sides are, to a large extent, arable, and are fine grazing lands.

The timber is abundant, and of valuable kinds, as oak, hickory, chestnut, pine, poplar, walnut, &c.

The minerals and mineral waters of Rockbridge are varied and valuable; and consist of iron ore, tin ore,* arsenopyrite containing gold and silver, manganese, barytes, marble, gypsum and limestone, some of it hydraulic.

The mineral springs of this county—the “Rockbridge Alum,” “Jordan Alum,” “Cold Sulphur,” “Wilson’s White Sulphur,” and “Rockbridge Baths,” have a wide celebrity, and are much resorted to for health and pleasure.

Lexington, the county-seat, is located on North river, near the centre of the county, and is the seat of the Virginia Military Institute and of Washington and Lee University, two eminent institutions of learning.

The Natural Bridge in this county is reckoned as one of the world’s wonders.

North river flows through the centre of the county, and empties into the James near the south border.

Transportation by rail is furnished by the Chesapeake and Ohio railroad on the north, the Valley branch of the Baltimore and Ohio from its northeast border to Lexington, where it connects with the Richmond and Alleghany railroad, which runs for some distance through the southern border, and by the Shenandoah Valley railroad passing east through the eastern and southern portion.

Tourists find in this county some of the grandest scenery of the continent. Besides the Natural Bridge above-mentioned, “Balcony Falls,” where James river cuts its way through the Blue Ridge, and the “Goshen Fass,” on North river, have long been celebrated, and now that this region has become accessible, are daily drawing greater crowds.

ROCKBRIDGE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Cement*, from James River Cement Works, Balcony Falls station, Richmond and Alleghany railroad.

2. *Potsdam Sandstone*, scolithus bed, formation No. 1, mouth of North river of James.

3. *Limestone*, from bluff below Natural Bridge station, Richmond and Alleghany railroad.

4-5. *Iron Ores*, from No. 7, and *Red Shale*, from No. 5, from Guy Run iron lands of E. A. Parker.

6. *Tufaceous Marl*, deposit from Marl river, at Lyle’s plow factory, near Midway.

7. *Limonite*, brown iron ore from upper shales of potsdam No. 1, at Fulton ore bank.

8. *Limonite*, brown iron ore, massive block, Donald bed in Dogwood hollow.

* Recently tin has been found on Irish creek, near Vesuvias station, on S. V. R. R., very rich in yield, and promising valuable results. It is now in process of development. It assays from 39 to 40 pure tin. Magnesian lime for hydraulic cement is found on the Glendale estate, and has for many years been made into cement at Balcony Falls, just below. It is also found on the North river, just above Balcony Falls, immediately on the S. V. R. R.

Glenwood furnace, near Glenwood station, is out of blast. It is near very fine iron veins. The “Buena Vista” Iron mines are near the K. & A. R. R., and are exceptionally rich. No better site for an iron furnace can be found in Virginia than at or near Balcony Falls. The largest iron furnace in the State is at Goshen, in this county. Its material is furnished from the mines near the Rockbridge Alum Springs, by means of a branch railway. Its capacity is from 125 to 150 tons a day.

The following fourteen specimens are from the cabinet of Dr. E. A. Gibbs, Lexington :

9. *Variagated Pink Marble.*
10. *Limestone.*
11. *Coraline Limestone.*
12. *Gray Limestone*, contains 97 per cent. of lime carbonate.
13. *Light Gray Limestone*, contains 96 to 98 per cent. of lime carbonate.
14. *Blue Limestone*, marble, from near Natural Bridge.
15. *Black Marble*, from near Lexington.
16. *Black Marble*, from near Goshen.
17. *Yellow variagated Marble.*
18. *Brown Marble.*
19. *Stalactitic Marble*, found in large masses.
20. *Yellow stalactitic, variagated Marble*, near Rockbridge Baths.
21. *Variagated Marble*, from Thompkin's.
22. *Black Marble*, from Steel's.
23. *Red Shale Iron Ore*, from lands of Echols, Bell & Catlett, Staunton.
24. *Limonite*, from "Fridley" mine of the above firm.

The following are from collection of Prof. J. L. Campbell, Lexington :

25. *Limonite Iron Ore*, fibrous, from Graham's bed on Irish creek.
26. *Limonite*, massive, from same locality as above.
27. *Limonite*, massive, from "Echols" mine, near Balcony Falls.
28. *Limonite*, fibrous, from same locality.
29. *Limonite*, massive, from Victoria furnace mines, near Rockbridge Alum Springs.
30. *Limonite*, from same locality as above.
31. *Limonite*, fibrous and radiated, from Glenwood mines, Western Blue Ridge.
32. *Baryta*, from near Lexington.
33. *Dufrenite*, hydrated phosphate of iron, fibrous divergent ; from Blue Ridge (South mountain), Irish creek region, 12 miles east from Lexington. This is the only locality of this mineral, so far as known, in any of the Southern States.
34. *Dufrenite*, nodular, radiated ; from same locality as above.
35. *Dufrenite*, incrustation with concentric layers ; from same place as above.
36. *Cassiterite*, tin ore, massive ; from Irish creek region of Blue Ridge.
37. *Tin Ore*, cross section of crystalline vein ; from same place as above.
38. *Tin Ore*, group of crystals in gangue of quartz and yellow mica ; from same as above.
39. *Gray Coraline Marble*, from near Lexington ; dressed and polished by Mr. John Hileman.
40. *Ochre* ; from outcrop of cement limestone on James river.
41. *Magnetic Iron Ore* ; occurs in large amounts at Robert Grant's, on Irish creek.
42. *Hornblendic Granite* ; occurs on Tye River Gay road, on west side of Blue Ridge.
43. *Brown Hematite Iron Ore*, from "Carson ore beds of J. E. A. Gibbs, of Raphine.
44. *Glass Sand*, from Potsdam, near Balcony Falls, from Virginia Department of Agriculture.

45. *Manganese*, from Guy Run iron lands of E. A. Packer, of New York city.
46. *Paints*, a number of colors, from ochres, &c., mica, and made by H. Lerna, of Goshen.
47. *Cassiterite*, from "Mt. Maria" mine, on Irish creek, belonging to Robertson & Grant. Major A. D. Robertson writes us that this ore is from a nearly vertical vein, about 2' thick, opened at 3 or 4 points, and drifted in by tunnel 80' long. It yields $3\frac{1}{2}$ per cent. of metallic tin. Seventeen other veins have been opened, and the existence of others is known. This tin ore has been found over an area of 7 miles in length by 1 mile wide.
48. *Tin Ore*, cassiterite, 200 pounds, from mine of Mrs. Martha D. Cash, Irish creek post-office. This is from the same veins and region as the "Mt. Maria" ore above described.

The following from exhibit of N. and W. and S. V. Railroads :

Iron Ore, from "Cash" mines, on Irish creek, 8 miles southeast from Vesuvius station, S. V. R. R.

Tin Ore, from "Buena Vista" mines, on S. V. R. R., Capt. C. F. Jordan, manager.

ROCKINGHAM

was formed from Augusta in 1778, and has an area rather greater than that of the parent county. It contains 1,079 square miles, or 690,051 acres, so that it is the largest county in the State, and is second among the Valley counties in population, having 29,567 inhabitants. Although there is much waste mountain land in Rockingham, the average assessed value of the whole is over \$10 per acre, or a total of \$6,947,308.

Every part of this county is watered by the Shenandoah and its numerous tributaries, and there is a large extent of rich meadow land.

Rockingham is one of the largest grain producing counties in the State, and exports large quantities of flour, which has a high reputation in the Eastern markets. All the cereals thrive here, not only those cultivated generally, but buckwheat and barley. And this is peculiarly a grass and cattle region, and a county of fine horses. Great numbers of choice cattle and horses are shipped from Rockingham to the Northern States.

The mineral wealth of this county is considerable—iron, copper, lead and coal. Limestone is everywhere. Several varieties of marble are found here.

There are mineral waters of great virtue in Rockingham, the most resorted to being the celebrated "Rawley Springs," eleven miles from Harrisonburg.

Two great lines of railroad pass through this county—the Valley branch of the Baltimore and Ohio and the "Shenandoah Valley" road. These give excellent facilities for marketing the rich products—agricultural and mineral—of the county, and will rapidly attract immigration to this beautiful Valley.

There is also a narrow gauge railroad from Harrisonburg to Elkton, connecting the two main lines, and facilitating communication between the different parts of the county.

Harrisonburg, the county seat, on the Valley branch of the Baltimore and Ohio, is a growing town of near four thousand inhabitants—the centre of trade of this rich county.

ROCKINGHAM COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Prof. Fontaine.

1. *Diorite*, occurs in an eruptive dyke 200 feet wide near top of Blue Ridge.
2. *Epidotic Jasper*, from ledge eight feet wide, in Chlorite-Schist, at Swift Run Gap.
3. *Syenite*, occurs in immense quantities in the Blue Ridge on Swift Run Gap road.

The following from the U. S. Assistant Commissioner Major Jed. Hotchkiss :

4. *Case of Chalybeate Water*, from Rawley Springs.
5. *Galena* (lead sulphuret), from Dan'l Showalter's farm, near Chrisman Post-Office.

The following were contributed by Mr. C. D. Harnsberger, from western base of the Blue Ridge :

6. Two samples *Iron Ore, Limonite*, from the Potsdam No. 1, from the Miller bank of the Mt. Vernon Iron property, near Weyer's Cave station, S. V. R. R.
7. *Limonite, Iron Ore*, from "Raines'" ore bank of Abbott Iron Co., 3 miles northeast from Port Republic Station, S. V. R. R.
8. *Iron Ore, Limonite*, from "Weaver" bank, near 120 mile-post of S. V. R. R. Abbott Iron Co.
9. *Iron Ore, Limonite*, from "Slip" bank of Abbott Iron Company, near same point.
10. *Ochre, Hamilton's Paint*, from near Keezletown, from Va. Dept. Agriculture.
11. *Kaolin*, from Mrs. J. J. Wood's, from Va. Dept. Agriculture.
12. *Trap Rock*, locally called "*Ironstone*," from a dyke 40 to 50 feet wide, near the Augusta line, two miles southwest from Port Republic, near Leroy village.

This particular block of trap, two and a half feet long, two feet wide, and two feet high, is an historic one, as it is the block that was used as an "anvil block," for a tilt-hammer in the blacksmith shop of Selah Holbrook, at Port Republic; and on the anvil that was morticed into this block Selah Holbrook and his son, J. H. Holbrook, in 1843, made the sickles for Cyrus McCormick, that were used in the first McCormick reaper or harvester. Loaned by C. D. Harnsberger, the owner of it, Port Republic, Va.

SHENANDOAH

was formed in 1772 from Frederick. It contains 327,676 acres, valued at \$3,608,176. Population, 18,204. The surface is rolling, with some considerable mountains and valleys of great beauty and fertility—a very large proportion of the county being of the best class of valley land—disintegrated limestone—a strong and durable soil, admirably adapted to all the cereals and grasses of the climate. In Shenandoah are some of the finest farms in the State, and live farmers who know the value of improved stock, and vie with each other and with those of the adjoining counties for the production of the best.

The north fork of Shenandoah river traverses the entire length of this county, abundantly watering it, and giving power for manufacturing purposes. The valley of this river cannot be excelled for the beauty and fertility of its lands. The valley branch of the Baltimore and Ohio railroad runs the entire length of this county from northeast to southwest, its line being of convenient access from all parts of the county.

The minerals found here are iron ore, coal, manganese, galena, antimony, marble and limestone. Very little developed as yet. The "Columbia" and "Liberty" furnaces in this county make A No. 1 pig iron. At Edinburg a large agricultural implement factory has been organized.

Much of the wheat raised here is exported in the shape of flour, which has a high reputation.

Among the attractions of this county should be mentioned the "Orkney Springs," a place of great resort for health and pleasure seekers from other States and all parts of Virginia.

SHENANDOAH COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Limonite and other Iron Ores*, mainly from No. V, Limestone No. VI, Lower Helderberg; Charcoal pig iron, &c., from mines of Columbia and Liberty furnaces of Columbia-Liberty Iron Co., in North mountains, on Stony creek, west side of "The Valley," W. D. Pollard contributor.

2. *Limonite and other Iron Ores*, mainly from No. V, Limestones No. V, charcoal pig iron of various grades; manganese sandstones, from Dr. Frank King, Van Buren furnace, Cedar Creek valley.

3. *Iron Ores, Limestones, &c.*, from Henrietta furnace, head of Stony creek, west of Little North mountain, Mrs. A. J. Myers.

The following were collected for the Virginia Midland railway by M. W. G. Douglas :

1. *Manganese*, from Powell's Fort M. Co., near Water Lick station.
2. *Iron Ore*, from same company and locality as above.
3. *Calcareous Tufa*, or *Travertine Marl*, one mile from Strasburg.

The following are from the furnace property of Mrs. A. J. Myers, Shenandoah Alum Springs post-office :

3. *Iron Ore*, from Powder Spring bank.
4. *Iron Ore*, from Open bank on Iron Hill.
5. *Iron Ore*, from extensive outcrop near furnace stack.
6. *Limestone*, from near furnace.
7. *Fire Clay and Brick*, from same.
8. *Shales and other Rocks*, from vicinity of furnace.
9. *Shenandoah Alum Water*, claimed to be best of its class.
10. *Sulphur Iron Water*.
13. *Chalybeate Water*.
15. *Lithia-Sulphur Water*.
15. *Alum Shale*, from which the above alum water flows. All these waters are

from a circle of 300 yards, and Mrs. Myers claims it as the greatest variety of mineral waters of medicinal value from one locality.

10. *Iron Ore*, from David Neff, from Virginia Department of Agriculture.

11. *Calc-Spar*, from Geo. J. Grandstaff, of Edinburg, from Virginia Department of Agriculture.

SMYTH

was formed in 1831 from Washington and Wythe. It is in the form of a parallelogram with two of its sides about thirty miles in length, and contains 327,394 of land, assessed for taxes at \$1,662,424. Population, 12,160.

It has on the north Clinch mountain, Poor Valley mountain, Walker's mountain and Brush mountain, while Iron mountain forms its southeastern boundary. These ranges have courses parallel with each other northeast to southwest, and are separated by valleys of fine farming and grazing lands.

The productions are tobacco, corn, wheat, oats, rye, buckwheat, grass and fat cattle. Tobacco culture in this and the adjoining counties has been rapidly developed in the last few years. Bright tobacco of the finest quality is now grown in this region, and the planter has learned to handle it so as to get the top market prices. The mountain lands produce spontaneously the finest blue grass, and so it follows that this is an admirable stock country.

Timber is abundant and of the valuable kinds common to this section of the State.

The climate is a delightful one in the summer, and is very healthy.

There is no town of importance except Marion, the county seat, which is a beautiful and busy town on the line of the Norfolk and Western road. The Norfolk and Western railroad crosses this county about the centre, and has Marion, the county seat, as one of its stations.

Smyth is drained by the three forks of the Holston river, giving it abundant water power for all kind of manufacturing purposes.

The minerals of this county include iron ore, lead ore, copper ore, gypsum, salt and marble. These minerals are in great abundance and some of them are being extensively developed.

SMYTH COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Red Iron Ore*, from six-foot bed many miles long, head of Coma creek, on Smyth and Grayson line; from Capt. C. R. Boyd.

2. *Marble*, from Hezekiah Harman's land; from Capt. C. R. Boyd.

The following were collected by Mr. James H. Gilmore, of Marion:

3. *Iron Ore*, from the lands of Thomas E. Gardiner.

4. *Iron Ore*, from the lands of M. B. Tate.

5. *Iron Ore*, from the lands of John M. Preston.

6. *Barytes*, two samples, from the land of G. C. Goodell.

7. *Soapstone*, from the land of A. G. Pendleton.

8. *Gypsum*, plaster, from the land of J. H. Buchanan.

9. *Brown Hematite Iron Ore*, occurs in large amounts west of Marion; from Prof. Fontaine.

WARREN

was formed in 1837 from Frederick and Shenandoah. It is 20 miles long and 12 miles in width; and contains 125,785 acres of land, valued at \$1,340,147. Population, 7,405.

It lies on the western slope of the Blue Ridge, and has Three-Top mountain on its western border. The south fork of Shenandoah river passes through its centre.

The surface varies from intervalles and gently sloping hills to steep mountain declivities.

The soil is in general excellent—formed from disintegrated and limestone, and (in places) from epidotes and horn-blende, and produces excellent crops of corn, oats, rye, wheat, buckwheat, and grass; and much care and attention is devoted to fruit-raising. Grape-culture especially has been extensively and successfully carried on for many years, the epidote lands in the vicinity of the beautiful village, "Front Royal," being admirably adapted to the growth of the choicest varieties of the vine.

Stock-raising forms one of the most important industries.

The transportation facilities are excellent, and are furnished by the Shenandoah Valley railroad, passing from north to south through the centre, and the Manassas branch of the Va. Midland railroad, crossing it from east to west.

This is a most highly favored and desirable region to live in, enjoying a delightful climate and having all the accessories for prosperity and pleasant living.

The minerals are iron ore, copper, ochre, umber, and limestone, of which the following specimens were on exhibition at the New Orleans Exposition :

Umber and Ochre, from Salina and other banks near Overall station.

Iron Ore, from "Happy Creek Mining Company," one mile from Happy Creek station.

Limonite Iron Ore, from "Iron Mountain Mine," of Mavis & Reynolds.

Limestone, from quarry of Carson & Sons, burned extensively.

WASHINGTON.

Population, 25,199; contains 385,309 acres, assessed at \$2,879,712.

This one of the finest counties of the southwestern part of the State. It lies on the Tennessee border, and is bounded on the northwest by Clinch mountain and on the southeast by the Blue Ridge. It is watered by the three forks of the Holston river, which pass through its length, and, with their tributaries, furnish abundant power for mills and factories.

The surface is rolling in its central parts and quite rugged on its mountain borders. The soil is a rich limestone, producing fine crops of tobacco, the cereals and grasses.* Cattle, horses and sheep are reared and fattened in great numbers.

* A correspondent, in reply to an interrogatory, says Washington county produced about 2,000,000 pounds tobacco in 1884. The great bulk of the crop in this section is bright; generally of good body and excellent texture. Being grown on new lands, it is remarkably free from dirt and is very sweet. The bright crops of 1884 have averaged so far, at public sale in warehouses in Abingdon, from \$10 to \$25. The bright crop of 1883, averaged from \$10 to \$45. Our best tobacco is raised on freestone lands; yet we have some very fine crops from limestone.

This county is rich in minerals. On the west slope of the Blue Ridge are large deposits of a semi-magnetic iron ore, free from phosphorus and containing 69.74 of metallic iron. On Clinch mountain are found continuous beds of fossil ore. Lead and zinc ores, salt and plaster are also found in this county. "The Holston Salt and Plaster Company," at Saltville, are now producing annually 800,000 bushels of salt, and this company, together with "The Beuna Vista Plaster Company," produce 6,000 tons of plaster yearly. The salt wells at this place have the strongest brine known, and that, as well as the gypsum veins, are inexhaustible, and extend many miles into the adjacent county of Smyth.

The climate of this region cannot be excelled for health and pleasantness, as is evidenced by the large stature and robust appearance of the people.

Abingdon, the chief town, has a population of over 2,500, and is a centre of refinement and culture. It has two female colleges and a fine courthouse, in which is held not only the county and circuit courts of the State, but the circuit court of the Federal Government for the Western District of Virginia.

Bristol, just on the county line, contains about 4,000 inhabitants, and is the western terminus of the Norfolk and Western railroad, which traverses the county centrally. There is a branch of this road from Glade Spring to Saltville, near the Smyth county line.

WASHINGTON COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Capt. C. R. Boyd.

1. *Iron Ore*, semi-magnetic, from Gallaher mine.
2. *Mineral Water*, and "iron and alum mass," from Seven Springs.

From Gen. J. D. Imboden.

3. *Limestone*, highly fossiliferous, 8" cube from north fork of Holston, at Mendota.
4. *Grindstone*, 15" by 4½", from a surface sample, from mouth of Whetstone branch of Wolf creek.
5. *Red Calcareous Rock*, very hard, fine building stone, from stratum over 30' thick, near Mendota.
6. *Limestone*, Valley or No. II, from one mile west from Goodson.
7. *Bayrites*, from Virginia Department of Agriculture.

The following are contributed by W. K. Armistead, of Abingdon:

8. *Plaster*, sulphate of lime, one box from near Saltville.
9. *Iron Ore*, semi-magnetic, from Gallaher mine, near N. and W. R. R., 5 miles northeast from Abingdon.
10. *Iron Ore*, red, from Ricketts' mine.
11. *Iron Ore*, red, from Gallaher mine.
12. *Iron Ore*, red, from Gray mine, South Fork of Holston river.
13. *Iron Ore*, fossil, dyestone, or Clinton, from Big Moccason Gap of Clinch mountain.
14. *Brown Iron Ore*, Oriskany, from Clinch mountain.
15. *Broken Iron Ore*, from Potsdam shales.
16. *Brown Iron Ore*, from Silurian shales of Iron mountain.
17. *Manganese*, black oxide, from Potsdam shales of Iron mountain.

WYTHE

was formed in 1790 from Montgomery. Contains 363,404 acres, valued at \$2,647-747. Population, 14,814.

This county is an elevated mountain region, with three fertile valleys between the mountain ranges, which traverse it mainly from northeast to southwest. The soil in these valleys is very productive, and gives abundant returns in large crops of grain, hay, and fine pasturage for cattle.

The mountains are rugged and broken, but they are filled with abundant stores of mineral wealth; and are clothed with finely grown trees of various kinds—oak, hickory, chestnut, ash, pine, lynn, maple, and walnut.

Wythe is drained by New river and many of its tributaries which arise among lofty mountains, and, being fed by bold and constant springs, have abundant fall and volume during the driest seasons, affording vast amounts of water-power for mills and factories.

The Norfolk and Western railroad runs through the centre of this county, and has a branch road leading from Martin's station in Pulaski, into the great mining region in the southeast part of Wythe.

The minerals found in this county are immense in amount and value, and comprise iron ores, zinc ores, lead ores, manganese, barytes, asbestos, coal, marble, soapstone, gypsum, and kaolin. These minerals have been developed and proven to exist in immense deposits, and are now being largely worked. There are in operation many blast furnaces, forges, smelting works, and rolling mills.

Wytheville, the chief town and county-seat of Wythe, is a beautiful and flourishing place, possessing many attractions and solid advantages. Its healthful and bracing climate has caused it to become a great place of summer resort for southerners and lowlanders—and it is the central town of a great mineral region, and a fine pastoral and farming country as well. Population, 3,000.

WYTHE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Capt. F. J. Chapman.

1. *Limonite, Brown Iron Ore*, from Walton Furnace.
2. *Limonite*, from Van Liew Furnace Mine.
3. *Limonite*, from Graham Furnace Mine.
4. *Limonite*, from Frank Smith Mine, near Boom Furnace.
5. *Limonite*, from Boom Furnace Mine.
6. *Limonite*, from Pierce Furnace Mine.

The following from Capt. C. R. Boyd :

7. *A Series of Lead, Zinc, Iron and Barytes Ores*, illustrating Boyd's sections a Wythe Lead and Zinc Mines, and at Ivanhoe Furnace of Hendricks Bros.
8. *Zinc Ores*, from Falling Cliff Mine of D. S. Forney & Co.
9. *Brown Iron Ores and Turgite*, from Irondale, Slaughter, Dunn & Co., Ravenscliff and Speedwell deposits, Cripple Creek basin, from beds 20' to 120' thick.

10. *Pig Metal*, from Ivanhoe Furnace of Hendricks Bros. Stands breaking strain of 41,000 pounds.

11. *Copper Pyrites*, from southern spurs of Lick mountain, containing 30 per cent. copper.

12. *Potsdam Sandstone*, from Scolithus bed, Lick mountain near Wytheville.

13. *Brown Oxide of Iron and Manganese Oxide*, from 20th bed of W. A. Stuart's 15,000 acre tract, Lick mountain.

14. *Red Iron Ore*, semi-magnetic, from 9th bed of Frank Blair, near Wytheville.

15. *Brown Iron Ore*, from Robert Crockett's lands, southern spur of Little Walker mountain, in No. X. Ore contains 50 per cent. metallic iron, and 0.80 of phosphorus.

16. *Kidney, or Hollow Iron Ore*, black band, from outcrop 18th thick, in No. X, from Stony Fork.

17. *Bituminous Coal of No. X*, from Stony Fork.

18. *Coke*, made from the above coal.

19. *Red and Brown Iron Ores*, from black slates of No. VIII, from southern foot of Big Walker mountain.

20. *Clay Iron Ore*, from base of black slates of No. VIII.

21. *Flint*, from upper Helderberg, showing zinc blende, from south foot of Big Walker mountain.

22. *Brown Oxide of Iron*, from 18th of No. VIII, Oriskany, south slope of Big Walker mountain.

23. *Brown Iron Ore*, from No. VII, Oriskany, from lands of Boyd, Stearns & Co., Walker mountain.

24. *Brown Shale Iron Ores*, of No. V, from same locality as above.

25. *Red Shale Iron Ores*, of No. V, from same locality as above.

26. *Fossils, Spirifers, &c.*, from No. IX, from Crockett Cove, Little Walker mountain.

27. *Fossil Coal Plants*, from Proto-Carboniferous rocks, No. X, Stony Fork.

28. *Variegated Marble*, from lands of Umbarger and others, near Wytheville.

29. *Limestone*..

30. *Limestone*, No. II.

31. *Calcium Fluoride*, fluor spar, from Red Creek, three miles west from Wytheville.

32. *Mineral Water*, from Wytheville.

33. *Grindstone Rock*, from base of No. X, Stony Fork of Reed Creek.

34. *Whetstone Rock*, from No. IX, Old Red Sandstone Series, from Stony Fork.

35. *Fine Hone Grit*, from lands of Boyd, Stearns and others, south slope of Big Walker mountain; said to be equal in quality to the Scotch.

36. *Manganese Oxide*, from Crawfords.

37. *Sandstone*, with *Scolithus linearis*, from Lick mountain range, largely used for backing and hearthstone in blast furnaces.

38. *Sandstone*, for glass making, from Lick mountain lands of Stuart and others.

39. *Lead Sulphuret*, from lands of Mr. Price, near Ivanhoe furnace, New River region.

40. *Iron Ore*, from lands of Lobdel Car Wheel Co.; from northern outcrop of Cripple creek.

41. *Iron Ore*, brown, from Simmerman's, Cripple creek region.

The following are from Old Poplar Camp Furnace, in the gap of Poplar Camp mountain, contributed by A. N. Chaffee, owner of the furnace property :

- 42. *Iron Ore*, from Potsdam shales.
- 43. *Sandstone*, Potsdam.
- 44. *Limestone*, formerly used in Poplar Camp furnace.
- 45. *Oilstone*, from Little Walker mountain, from Va. Department of Agriculture.
- 46. *Ochrous Silicate*, from Sayers, New River, mouth of Reed Creek, from Va. Department of Agriculture.
- 47. *Manganese*, from Guy Run Iron lands of E. A. Packer, of N. Y.
- 48. *Paints*, from ochres, &c., mined and made by H. Lerner, of Goshen, Va. mines on slope of Chambers mountain near west end of Goshen Pass.

BLUE RIDGE DIVISION OR NEW RIVER PLATEAU.

This elevated plateau, situated between the two interesting and widely diverging limbs of the bifurcation of the Blue Ridge, presents many features of high interest alike to the geologist and the practical miner. All of its ledges and bands of rock strata, its numerous deposits of ores and minerals, and its system of drainage, seem to have been projected on a scale of superior proportions. Its elevation above tide of about 2,600 feet average, secures for it perfect immunity from malarial diseases and its high mountains, wooded to the summit, bring the rains in due season; so that, with greater facilities of transportation once secured to it, they will become a most formidable competitor with all other divisions as a factor in solving the question of the State's prosperity.

As heretofore stated, the plateau of the Blue Ridge is composed of the three counties—Floyd, Carroll and Grayson. They are separated from the Valley Division by the westerly bifurcation of the Blue Ridge, under the names of Pilot mountain, Poplar Camp and Iron mountains, and from Piedmont by the southerly limb of that bifurcation.

In the absence of lines of railway transportation, by which the superior beds and deposits of valuable ores would be developed, these counties now send to market from their naturally strong soil, herds of fine healthy cattle, flocks of sheep, much high-priced tobacco, wheat, dried fruit, herbs, &c., and possibly the finest apples produced in Virginia. This freestone soil—that is, the soil resulting from a decomposition *in situ* of extensive bands of granitoid rocks, gneiss, hornblende, aluminous slates, shales, feldspars, &c., in fact, all the wide range of silicates of alumina, potash, lime, soda, iron, &c., seems, at this elevation of over 2,000 feet above tide, and in latitude 38°40', to be the home of the apple, pear, peach, plum, and other fruits, in a sense, that means perfection in the fruit and unfailing crops, year after year, with the possible exception of the peach. Should railway transportation at last be supplied these counties, in order to develop their mineral resources, one of the first effects resulting would be the great stimulus given to the increased production of fruits and fine tobacco. The ores and minerals of greatest value in these systems of rocks—between the azoic, on the south margin, and the Huronian on the north—are magnetic, specular and brown ores of iron, sulphuretted ores of iron and copper, lead and zinc, manganese, gold and silver, nickel, mica, asbestos, granite, syenite, gneiss, steatite, baryta, feldspar, and potters and fire-brick clays, quartz, &c.

Beginning in Floyd and proceeding southwest, gold is found on Laurel creek; magnetic iron ore shows in a band two miles south of Floyd courthouse; at Toncray copper mine 4 feet thick and now and then throughout the range on the

south side of Carroll and Grayson. Another great line of magnetites commencing south of the gold belt in Floyd, and proceeding southwest near the great copper veins of Carroll, becomes of high commercial importance in Grayson, both from its measures and great purity.

Two miles north of Old Town, in Grayson, and then south of Independence, near New river, and where the same ledges pass out southwest below the mouth of Wilson, in Grayson, these magnetites are quite valuable and extensive. Near these are occasional bodies of specular iron ores.

The copper ores, combined with sulphurets, are in large quantity at Toncray and other mines in Floyd, as oxides, carbonates and sulphurets, on what is familiarly known as the southern lode; then northwardly towards Laurel and Brush creeks, the sulphuretted lodes of copper and iron which becomes so extensive in Carroll, seem to make some surface exhibits.

In Carroll county, on a line north of the courthouse, these great copper deposits running northeast and southwest are fully twenty miles in length, in veins over 26 feet thickness, dipping southeast and frequently assuming a thickness above 60 feet and sometimes 150 feet between floor and roof—generally, this floor and roof is Talco—micaceous slate interspersed now and then with quartz. This deposit continues on southwest through Grayson, along a line near Old Town and New river, and passes on toward Ducktown.

Close analyses of these sulphuretted ores show them to average from 1.70 to 5 per cent. of copper, 40 to 46 per cent. of sulphur, and about 50 per cent. of iron. Their decomposition down to about 45 feet below the surface has left large quantities of limonite on the surface, by which the veins are easily traced; down in the deposits, just above the undecomposed ores, are considerable bodies of black oxide of copper, copper glance, &c.

The tonnage from these deposits would necessarily be immense once transportation was assured. Then again, south of Carroll Courthouse are handsome exhibits of native copper, as showing at Sutphin's, Early's, &c.; copper pyrites is even built into the foundation of the courthouse in stone taken from the northeast continuation of what is known as the Peachbottom vein, a deposit that extends southwest through Carroll and Grayson into North Carolina.

The greater ledges of granite, gneiss, syenite, &c., are found in Grayson county, north of the Courthouse, in Point Lookout and Buck mountains, and in Balsam and White Top mountains. Soapstone ledges are found near the great copper and iron sulphuret lode (south of it). Mica and asbestos are found in the southeast side of Grayson. Asbestos also in Floyd and Carroll, in the Blue Ridge, south side of the county, and the rest of the minerals named are generally distributed.

This plateau is noted for the perennial flow of its fine, clear streams, their volume and their fall per mile being such as to give them high importance and usefulness. New river, Little river and some of their larger tributaries will each give powers of very large dimensions.

BLUE RIDGE BY COUNTIES.

COUNTIES.

Floyd.

Carroll.

Grayson.

BLUE RIDGE DIVISION.

FLOYD

was formed in 1831 from Montgomery. It is 38 miles long with a mean width of 18 miles, and has 239,415 acres of land, valued at \$1,017,397. Population, 13,221. It is surrounded by the counties of Patrick, Carroll, Pulaski, Montgomery, and Franklin, and lies between two prominent ranges of the Blue Ridge mountains. The surface is rolling; the soil is fertile, and well adapted to the grains and grasses. The products are tobacco, wheat, corn, oats, hay. Many fine horses, mules, cattle, sheep and hogs are raised in this county. The finer grades of tobacco are raised here, and bring a considerable revenue to the county. It is watered by Little river and its many branches. This is an elevated and healthy region, and possesses a delightful summer climate. Fruit-raising is profitable. Its nearest railroad is the Norfolk and Western, passing through the adjoining counties of Montgomery and Pulaski. It is hoped that the Franklin and Pittsylvania railroad will soon be extended into this county. The timber consists of white oak, red oak, black oak, chestnut oak, hickory, white ash, pine, walnut, dogwood, maple, blackgum, and chestnut. About one-half of the area of the county is in original forest timber of the varieties named.

Minerals are found in different localities—gold, iron, copper, and ochre; also, a very fine quality of soapstone and asbestos, in large quantities. The copper ore is very valuable. The soapstone is valuable in the construction of furnaces for smelting operations.

The gold discoveries on Laurel creek, in Floyd county, are proving valuable.

FLOYD COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

1. *Red Iron Ore*, from Ultizers' ford.
2. *Terra Cotta Clays with Soapstone*, from Dr. H. Clarks' leases, corner of Floyd, Carroll, and Patrick.
3. *Arsenopyrite*, with 32 ounces of silver to the ton, from upper waters of Roanoke river.
4. *Steatite*, from near Floyd Courthouse.
5. *Gold Ore*, from Brush creek, from W. H. Harman, Floyd Courthouse.
6. *Kaolin*, from near Floyd Courthouse, W. H. Harman.

CARROLL

was formed in 1842 from Grayson. It contains 355,731 acres, valued at \$551,741. Population, 13,323.

This is the central one of the three counties of that elevated plateau, formed by the bifurcation of the Blue Ridge range of mountains—Floyd and Grayson being the other two. The surface is much broken and mountainous, but there are many rich valleys and fertile plains, and the hill lands and mountain sides afford grass and pasturage of the best description. The soil varies greatly in color and texture, but is uniformly fertile.

The productions are tobacco, wheat, corn, oats, grass and fruits. Fruits are produced in great perfection here, especially the apple and grape.

A large portion of the county is still in timber of the original forest growth, consisting mostly of the oak and other hard wood trees. There are some very good bodies of white pine in the northwestern section of the county.

New river and many of its large tributaries flow through the county, and furnish much valuable water-power.

Carroll is without railroad facilities except the northwest borders, near which runs the "Cripple Creek Branch" of the Norfolk and Western railroad into the southern part of Wythe.

This region is very rich in minerals, consisting of iron ores, copper, lead, zinc, steatite, mica, etc. The following specimens of minerals from this county were exhibited at the New Orleans Exposition:

CARROLL COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Copper*, carbonates and pyrites, in siliceous gangue, from Peachbottom veins at Dobbys.
2. *Iron and Copper Pyrites*, from bedded vein 28 inches thick and 20 miles long, near Cranberry Plains.
3. *Copper Sulphuret*, same locality as above.
4. *Iron Ore, Hydrated Peroxide*, from cap of pyrites bedded vein, same place as 1 and 2.
5. *Native Copper and Gangue*, from Sutphin mine, averages 5 per cent. of metal.
6. *Mineral Water*, from Grayson Sulphur Springs.
7. *Copper and Iron Pyrites*, with copper carbonate and gangue, from ore bands southern side of Floyd and Carroll.
8. *Copper Pyrites*, from Wildcat mines, near Hillsville.
9. *Copper Pyrites and Magnetic Pyrites*, from Cranberry mines, near Hillsville.
10. *Magnetic Pyrites*, occurs in immense quantities in massive ledges.
11. *Mica-Schist*, occurs in large amounts near Hillsville, and is well suited for quarrying.
12. *Copper Pyrites*, from property of S. S. & J. E. Clayton, 6 S. Gay street, Baltimore.

The following from the Virginia Department of Agriculture:

13. *Iron Ore*, hematite.
14. *Iron Ore*, limonite, from Martin Dalton.
15. *Lead Ore*, from Martin Dalton.

16. *Iron Ore*, from same.
17. *Gneiss*, from J. J. McGrady.
18. *Mica Slate*, from same.
16. *Iron Ore*, from Martin Dalton.

GRAYSON

was formed in 1792 from Wythe. It borders on the North Carolina line, and is bounded by Smyth, Wythe and Carroll. The western portion is mountainous, but its eastern and central parts lie in a fertile valley, and comprise a fine farming section. The productions are corn, wheat, oats, &c. This is a good grass region, and raises a great number of cattle, horses, sheep, &c. Population, 13,074. It contains 251,645 acres of land; assessed at \$594,826.

Bees and poultry thrive well. Fruit raising is an interesting and profitable business. The climate is pleasant and healthy, and the natural advantages of this section are very great. It lacks railroad facilities, the nearest road being the Norfolk and Western, passing through the adjoining county of Smyth.

This county has valuable mineral resources; copper (very rich), iron, mica, granite asbestos and steatite are found here. An iron ore of peculiar character is found in Grayson and Wythe, yielding, it is said, in some cases, by usual smelting process, a metal having all the qualities of steel.

Grayson is one among the best-watered counties in the State. New river and its tributaries traverse every part of it and afford abundant water-power for all kinds of machinery. But owing to the lack of transportation little manufacturing is carried on. One or two forges partially supply the home demand for iron, and recently one or two woolen mills have been erected. Timber is abundant, consisting principally of white and yellow pine, white oak, red oak, chestnut oak, some walnut and cherry, chestnut, hickory, maple, &c.

The one great need of this county is a railroad, and it will be as great a boon to other parts of the State as to the county. Two or three lines of railroad have been chartered through this county, and it is confidently believed that some one of them will be built in the near future.

Grayson is becoming noted for the number of neat white churches which dot its hills and valleys, and which indicate to the stranger the religious sentiment of its people. Several high schools, as well as the public school system, are in a prosperous condition. New framed school houses are rapidly taking the place of the less comfortable ones heretofore used.

GRAYSON COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

1. *Magnetic Iron Ore*, from 3' vein, two and one-half miles from Old Town, metallic iron 70 per cent., Capt. C. R. Boyd.
2. *Magnetic Iron Ore*, from beds of Slaughter, Dunn & Co., from Capt. C. R. Boyd.
3. *Hematite Iron Ore*, from Virginia Department of Agriculture.
4. *Pyrite*, S. M. Dickey, from Virginia Department of Agriculture.
5. *Chalcopyrite*, H. Williams. " " "
6. *Gneiss*, H. Williams. " " "
7. *Magnetite*, " " "
8. *Magnetite*, black oxide of iron, from Maj. W. K. Armistead, of Abingdon.

APPALACHIA.

Appalachia, with its long ranges of high mountains, shows in Southwestern Virginia some of its greater mountains so formed as to be well-calculated to call forth from a skillful general, as was General Washington, a remark meant to convey the idea that he would use them as an impregnable defence. Possibly he, in speaking in that sense of "the mountains of West Augusta," meant the very ranges that occupy the middle of Appalachia; and, apparently, make great natural fortresses, like Burk's Garden is in appearance.

This elevated mountain basin, in Tazewell county, in the very heart of the great Clinch range, contains about 30,000 acres of the most fertile blue grass land, and is surrounded by high, almost mural, mountain escarpments, all round, except at one point on the north side, where the waters of this singularly beautiful basin break through and form Wolk creek.

In the counties composing Appalachia, doubtless, there are many other localities of equal beauty and character as points of strategical importance; but this is slight indeed when compared with their value as the depositories of great mineral wealth, the storehouses of the rain and moisture, and the great barriers against the too sudden incursion of the great northern storms.

This interesting group of counties is made up, geologically, of the rocks between the earlier Palæozoic (leaving out the Primordial) and the lower carboniferous, inclusive, disposed in long, generally parallel lines, running northeastwardly and southwestwardly. Their rather irregular boundary line, on the southeast, pursues the general line of the great North mountains under various local names, as before stated; and having the Alleghany mountains a part of the way, and the eastern limb of the Cumberland mountains for a considerable distance on its northwest side. The whole territory, of about 3,800 square miles, is immensely important to the State for quite numerous reasons; among which, it may be stated, are the vast areas of superior grazing lands, in limestone valleys; extensive forests of excellent deciduous and soft woods, and some of the most important mineral-bearing series of rock formations in the State.

The great crust of the earth was broken up several times in the cosmical action by which it was formed, giving five or six repetitions of the great bands of which it is composed, in most of its transverse sections, from which have resulted most valuable alternations of mountain and valley, of limestone grass lands, and wooded ridges and mountains. These mountains are usually composed of a greater and a lesser range, coextensive and parallel—the larger holding the valuable iron and manganese-bearing rocks of the upper Silurian period, lying north-

wardly, and the smaller, the rocks of the latter half of the Devonian period, lying southwardly, with a valley of slate between. This smaller range frequently holds, on its south flank, valuable deposits of proto-carboniferous coal, as in Bland county and north parts of Alleghany county; but in Giles and Craig counties these coal rocks seem to be cut out by faults.

There is also a line of these very lowest of coal rocks in the southwestern corner of Wise county, and thence southwest through Lee along the east flank of the Cumberland mountains; but coal is not in them like it is in the great coal rocks close on the north of them.

In some localities the larger mountains are great curved anticlines, giving valuable and extensive outcrops of iron and manganese ores (Rogers' numbers V to VII and VIII inclusive), as is in the case of Rich Patch mountain, of Alleghany and north side of Botetourt county; Potts or Middle mountain, of Alleghany county; Salt Pond mountain in Giles and Round mountain in Bland county. These great anticlines are sometimes broken along their crests and spread apart longitudinally—apparently by some great end pressure—bringing to view the great fossil bearing limestones of III and IV, as in the case of Sinking creek, Giles county, and of Burk's Garden and Thompson & Ward's coves, Tazewell county, thus accounting for the wonderful fertility of those areas, so high as 2,600 to 3,600 feet above the sea level. These repeated breaks in the great crust give such fertile limestone belts as those of Nanny's creek and Dunlap's creek, of Alleghany; the number VI limestone belt of Pott's creek; Sinking creek, of Craig and Giles counties; the great basin of New river in Giles county, and the lines of Wolf and Walker's creeks in Giles and Bland counties; Burk's Garden and the great coves and valleys of Tazewell, on Clinch and Bluestone rivers and tributaries; the great coves, valleys and rich limestone gardens of Russell county, and of Scott county, and the like splendid grass valleys of Powell's valley in Lee county. Abb's valley in Tazewell and upper Powell's valley, of Wise, owe their rich limestone belts to like upthrows of sub-carboniferous rocks.

This region is marked by often repeated sections of some of the most valuable geological formations so far recorded; to go into any detailed description of which would necessitate the enumeration of nearly the whole range of rock strata comprised between the Archæan age and the carboniferous period, inclusive, with all their valuable stores of granite, syenite, gneiss, steatite, mica, asbestos, feldspar, quartz, glass sand, magnetic and specular iron ores, copper, gold and silver ores, nickel, manganese, tin, sulphur, zinc, lead, limonite and other ores of iron, barytes, gypsum, salt, petroleum, slate, honestone, grindstone, building stone, limestone, marble, cement stone, potters and firebrick clays, and bituminous, semi-bituminous, splint, cannel and semi-anthracite coals, and thermal and mineral waters—beginning such description in the Archæan on the southeast or Blue Ridge side, and ending it in the carboniferous rocks, on the northwest or Cumberland side. These various extensive bands or ledges of rocks, where they protrude above the surface, disclose a general strike or trend northeast and southwest, dipping at all angles, from positions almost perpendicular to nearly flat—the mountains and valleys generally showing the steeper dips inclining usually to southeastward, while the strata of the Cumberland plateau, or coal rocks, are found, in the main, nearly flat, with the whole broad expanse so presented to view as to render easily accessible much the greater part of the various minerals just mentioned.

The convulsions and disturbances of the earth's surface by which the great mountains composing the Appalachian chain in Virginia were formed as a whole, acted in such a way as to erect numerous greater and lesser lines of nearly parallel ridges, separated from each other by valleys, many of which are several times broader than the bases of the mountains by which they are bounded—resulting, as is the case in the great Southwest Valley and the valleys of the Holston, Walker's creek, Clear Fork, Clinch and Powell's rivers, and Giles and Burk Garden Basins, in the very extensive areas of fine grazing and farming lands, which owe their great natural fertility to the decomposition of massive bands of limestone, of which the rock material in these valleys, in great part, consists. But in these convulsions there were two most remarkable departures from the parallelism which marked their action throughout this region. One of them is shown on the easterly side of the Appalachians, in a great *bifurcation* of the Blue Ridge at the point where nearly join the counties of Roanoke, Floyd, Montgomery and Franklin, whence trend the two great arms of this bifurcation westwardly and southwardly, enveloping in their wide grasp the rich mineral plateau composed of the counties of Floyd, Carroll and Grayson.

The other remarkable evidence of this action is shown on the more westernly side of the Appalachians, in a bifurcation of the Cumberland mountain in Lee county, whence its two great arms trend eastwardly and northeastwardly, enveloping those noble coal areas comprised in a part of Lee county, nearly all of Wise, and the whole of Dickenson and Buchanan counties, and projecting a strip of coal rocks, of well ascertained value, into Tazewell, Russell and Scott counties The Blue Ridge plateau, so enveloped as described before, shows only one or two ledges of limestone; but derives the great fertility, observed in much of its soil, from the decomposition of heavy bands of aluminous silicates of potash, lime, iron, &c.; while the nearly similarly shaped plateau of the Cumberland owes whatever of fertility its soils may possess, to the wearing of sandstones, slates, &c, holding organic matter of fossils with some lime variously combined, and, in a few localities, thin beds of limestones, intercalated between the much heavier strata of sandstones and slates.

The great mountains bounding, and often dividing the extensive valleys longitudinally have a general elevation, above the valleys, of 1,000 to 1,600 feet, while the valleys are from 1,000 to 2,800 feet above sea-level.

On the southeast side of this extensive region is the Blue Ridge, forming, in its straighter alignment and prolongation, the southeast boundary of the great Valley of Virginia, throughout its extent.

Passing over numerous broken ridges, in the Valley itself, the great North mountains, under various names, such as The Gap, Walker's, and Clinch mountains, form the northwest boundary of the Great Valley, toward the southwest end, also forming the southeast boundary of Appalachia in the main; though the northeastward continuation of the Clinch range, after reaching Burk's Garden, and passing that lovely mountain basin, going northeast, divides Appalachia nearly in two—as is the case in Garden, Round Mountain, and their south-flanking ridge (Big Brushy), Wolf Creek, Pearis, Angel's Rest, Butte, and Salt-Pond mountains, upon which, at an elevation of 4,700 feet above sea-level, is the famous Mountain Lake, the origin of which dates back a little more than one hundred years.

Then, north of this a short distance, a part of Appalachia is bounded northwest by Peter's and East River mountains—the boundary line, at the east end of Taze-

well county, jumping across from East River mountain to Flat Top (near Pocahontas), which, with its continuations—Sandy Ridge and Stone mountains, &c., composing the eastern bifurcation of the Cumberland mountain—form the northwest boundary of Appalachia proper, toward the southwest.

Then, Trans-Appalachia holds on its northwest side, next Kentucky, the last of Virginia's great mountains—the Cumberland.

This important section of Virginia, so formed into such noble alternations of mountain and valley, hill and dale, of pasture and woodland, with its magnificent and inexhaustible repositories of mineral wealth, present a topography, systems of drainage and resulting atmospheric conditions, of superior excellence, which, together with its position on favorable parallels of latitude, combine to render it equal if not superior to any area of like size in the world.

The different systems of drainage so established may be enumerated as follows :

1. That of James river, flowing east into the Atlantic ocean ; its tributaries watering this territory being Otter creek, Roaring Run, Stone river, Purgatory, Looneys, Catawba, Craigs, Johns, Longs, Entry and Sinking creeks ; Jackson's river, Cow Pasture river, Wilson's, Mill, Potts, Dunlaps, and Indian Draft creeks, and many minor tributaries. These chiefly drain the counties of Bath, Highland, Botetourt, Alleghany and Craig, and a small part of Roanoke of this territory.

2. That of Roanoke river, flowing southeast through the Staunton and Dan river into the Atlantic ocean. Its tributaries, with which this paper is concerned, are Back creek, Wolf, Glaße, Tinkers, Mudlick, Peters, Cravens, Masons, Mill creeks, and others ; South Fork, North Fork, and their tributaries draining a small part of Botetourt, the greater part of Roanoke county, more than half of Montgomery, and a small area of Floyd county.

3. That of New river, which flows northward and northwest, forming the Great Kanawha, and delivers its waters through the Ohio and Mississippi rivers into the Gulf of Mexico. Its tributaries watering this territory are : East river, Wolf creek, Big and Little Stony, Doe and Sinking creeks, Mill and Walkers creeks, Morris Run, Back, Toms, Watts, Stroubles, Crab, Plum, Peak and Mack's creeks, Little river and its tributaries ; Big and Little Reed Island creeks ; Pine, Reed, Poplar-Camp and Cripple creeks ; Crooked, Chestnut and Brush creeks ; Upper Little river and tributaries ; Elk, Peachbottom, Bridle, Saddle, Wilsons, Grassy, Helton, Big and Little Horse creeks, and many minor tributaries. All of which drain, in whole or in part, the following counties : Giles, Bland, southeast side of Tazewell, west end of Craig, much of Montgomery, Pulaski, nearly all of Floyd (except some water gaps in Blue Ridge by the headwaters of the tributaries of Dan river), Wythe, a small area of Smyth, Grayson, and all of Carroll except that part which overlaps the Blue Ridge and is drained by the headwaters of Ararat, a tributary of Dan-river.

4. The drainage by the system of the Tennessee river, subdivided into : (a) that of the south, middle and north forks of Holston river and their tributaries ; (b) Clinch river and tributaries ; and (c) Powells river and tributaries, all of which, when united in the Tennessee river, flow westernly, thence through the Ohio and Mississippi rivers into the Gulf of Mexico. These drain, in whole or in part, the counties of Smyth, Washington, Tazewell, Russell, Scott and Lee, and a large area of Wise county.

5. The Louisa, Russell and Pound Forks of Sandy river and their tributaries,

draining the counties of Buchanan, Dickenson and a large part of Wise county, and flowing northwardly into the Ohio river.

These five extensive drainage systems, deriving their erosive power no less from their constancy than their great flood volumes, have, in the course of time, greatly modified the topography of this region. But, as in the case of Johns creek, a tributary of James river, whose head springs are quite 4,300 feet above the sea, near Mountain lake; tributaries of New river rising on White Top and Balsam mountains, fully 5,400 feet above tide; headwaters of Holston river, rising at Bear Town, near Burk's Garden, 4,700 feet above tide; and of Powell's river at Stone mountain, 4,000 feet above the sea, we have left to us, by these streams, and, also, unaffected by the agencies of ice and snow, these splendid contrasts in the elevations and depressions of this section's topography, which secure to the region not only a healthful and invigorating summer climate, that is fast tending to make it the sanitarium of the south; but adds no less to the beauty of the scenery, than security against any lengthened failure of rainfall.

NOTE.—In the foregoing general description of "Appalachia" it is not clearly stated that in this division is included all of Virginia west of the great Valley, the sub-division defined on the small map as "Trans-Appalachia," being treated as a part of the Grand Division. The great Appalachian chain, which is regarded as the dominant feature of the mountain system composing this region, gives its name thereto, and the term has not a very well-defined application, but it is sufficient for the present purpose to state that it comprises the thirteen counties west and north of the Valley Division.

To avoid confusion, attention is again called to the fact that county lines do not correspond accurately with the geological divisions of the State. It will be observed (see small map) that a strip of Appalachia extends along the whole tier of the Valley counties, taking in the western edge of Augusta, Rockingham, Shenandoah and Frederick, but by far the greater part of these counties being in the Valley, the edge projected into Appalachia is not considered separately.

And only the southern section of the "Blue Ridge," where it broadens out into the "plateau" embracing the three counties of Floyd, Carroll and Grayson is taken account of separately, the long narrow "ridge" north of Floyd being divided between the Valley and Piedmont.

As was natural, the writer of the last papers has regarded his subject with the eye of a geologist and mineralogist rather than with that of a farmer, and perhaps has not brought out the magnificent *agricultural* capabilities of this favored region as prominently as might be desired and deserved. In truth, the mineral wealth of the country described is so vast that it could hardly fail to engross the attention of a specialist in that line to the exclusion of other subjects of consideration. At a future time I hope that these other parts of the picture will be filled in by a hand as eager and as full of the subject as the writer of the last paper is of his specialty.—COM. OF AGRICULTURE.

COUNTIES OF APPALACHIA.

NATURAL SUB-DIVISIONS.	COUNTIES.
Sources of James.....	{ Highland. Bath. Alleghany. Craig.
New River Country.....	{ Giles. Bland.
Clinch River Country.....	{ Tazewell. Russell. Scott. Lee.
Sources of Big Sandy, or Trans-Appalachia.....	{ Buchanan. Wise. Dickenson.

APPALACHIA BY COUNTIES.

ALLEGHANY

was formed in 1822 from Bath, Botetourt and Monroe. It is twenty-six miles long and has a mean breadth of twenty miles, with an area of 463,500 acres, assessed at \$958,000. Population, 5,386.

The surface is mostly broken and mountainous, but there are some considerable valley lands of the finest limestone soils, producing excellent crops of tobacco, grain, fruits and grass. The main business of the farmers is grazing and rearing cattle, horses, sheep and swine. The mountains are clothed with immense forests of valuable timber, and are filled with iron ores of great purity and value. These ores have been largely developed and worked in the various furnaces in the county, of which "Clifton Forge," "Low Moor" and "Longdale" are the principal. Pig iron is turned out by these furnaces in great amounts and at low cost.

The country is watered by Jackson and Cow Pasture rivers, which unite near the eastern border and form the James. The Chesapeake and Ohio railway traverses this county centrally, passing through Covington, the county seat. The Richmond and Alleghany railroad connects at Clifton Forge with the Chesapeake and Ohio railway, and with its easy grades affords much relief to the heavy hauling of the great amounts of metal from this region.

This is a healthy region and the summer climate is delightful. The mountain lands are cheap, and, no doubt, capable of being utilized to a much greater extent than now in the stock raising business.

Covington, the county town, is a place of commercial importance, very favorably situated for trade. Low Moor, eight miles lower down on the Chesapeake and Ohio railway, is rapidly growing into a manufacturing town, the great iron works here being the nucleus.

ALLEGHANY COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Fossil Iron Ore*, from Clinton No. V, beds in Clifton Forge Pass, Richmond and Alleghany railroad.

From Low Moore Iron Company.

2. *Limonite Iron Ore*, lump, from company's mine in No. VII, Oriskany.

3. *Limonite Iron Ore*, washed, from same.

4. *Limestone*, No. VI Lower Helderberg; from quarry No. 1, used for flux.

5. *Coke*, made at Low Moor furnace, in company's ovens, and used in that furnace.
6. *Coal*, from No. XII or lower coal measures; from New River field of West Virginia on C. and O. R. R., from which above coke was made.
7. Sample of *Coke Pig Irons* made at Low Moor furnace from above ores: No. 1, foundry pig; No. 2, foundry pig; No. 1, mill pig; No. 2, mill pig; No. 3, close mill pig; No. 4, silvery pig; No. 5, mottled pig; No. 6, white pig; No. 7, part of "Salamander" blown from furnace "well" with "Atlas" powder after blast No. 2 of Low Moor furnace.
18. *Limonite Iron Ore*, from Iron Mountain mines, on Pounding Mill run.
19. *Stalactites and Stalagmites* and other cave rocks from a cave in Lower Helderberg, No. VI limestone, near Low Moor station, C. and O. R. R.
- 20 to 23. Five boxes *Pig Iron*, grades from No. 1 to mottled, inclusive, with the characteristic cinder for each grade; from the Longdale furnaces.
24. Box of Lower Helderberg No. VI limestone, used for flux in Longdale furnaces.
25. Box of *Coke*, used in Longdale furnaces, from the Sewell coal, bed and ovens of Longdale Company, at Sewell, W. Va., from New river or No. XII, Lower measures coal.
26. Box or lump ore, brown hematite, from Oriskany, or No. VII, from mines of Longdale Company, in Brushy mountain, near head of Simpson's creek.
27. Unwashed ore, or pay dirt, of above mines.
28. Washed ore of above mines.
29. Refuse from washer in washing above ores.
- 30 and 31. Clay and flint from top and bottom, respectively, of above iron mines.
32. Lump of *Cadmia*, from deposition from fumes in throats of Longdale blast furnaces.
33. *Limonite*, brown iron ore, lump weighing 625 pounds and box, from west side Peter's mountain, on Dunlap creek, two and a half miles south from Trice switch of C. and O. R. R., from mine of Keyser & McAllister, of Backbone, Va., from which some 25 tons are daily shipped to Etna Iron Works, Ironton, Ohio.
34. *Limonite*, brown iron ore, from fine deposit in No. VII Oriskany, at lower end of Clifton Forge pass, R. and A. R. R.
35. *Limonite*, brown iron ore, No. VII or Oriskany, from cuts 1, 2, 3 and 4, and washed ore, from the "Stack" mine, near Backbone station, C. and O. R. R.
36. *Limonite*, brown iron ore, "lump" and "pipe," from Rumsey mine.
37. *Hematite, Specular or Magnetic Iron Ore*, from Rumsey mine.

BATH

was formed in 1790 from parts of Augusta, Greenbrier and Botetourt, and is now one of the border counties. It has an area of 932 square miles or 617,402 acres, assessed at \$803,715. This shows a very low valuation; but the large proportion of waste mountain land explains this. Some of the valleys are exceedingly fertile and beautiful—the soil formed from disintegrated limestone—producing grain and grass luxuriantly; even in the mountains there is good grazing; so that this is a most excellent stock-raising county, beautifully watered by clear mountain streams, flowing into the Jackson and Cow Pasture rivers, which meander through this county and unite some miles below, near the borders of Alleghany and Botetourt.

The population of this county is small, only 4,525, or about 5 to the square mile; but the people are independent and prosperous, having a healthful and beautiful pastoral country.

The Chesapeake and Ohio railroad passes through the southeastern part of the county, giving an outlet for the abundant products, and access to the many attractive watering places of this county. Nature has been prodigal to Bath in respect to mineral springs. The Warm Sulphur, the Hot, the Healing, have long been celebrated—the "Warm Sulphur" for near a century. Here is the county seat "Warm Springs," an attractive village in the rich "Warm Springs Valley." In the southeastern part of the county, near the railroad, we have another group the Bath Alum, Millboro, Wallawhatoola. To these resort multitudes of summer visitors are attracted by the health-giving waters, pure air, lovely scenery, fine fishing and shooting, and excellent fare of this favored region.

There is much iron ore in this county, some of it has been worked successfully for many years.

Fine timber abounds in Bath, oak, walnut, pine, poplar, chestnut, sugar maple, hickory, &c.

BATH COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Virginia Department Agriculture.

1. *Limonite Iron Ore*, No. VII, Oriskany, from Joseph Baxter, Esq., Bath Alum Springs.
2. *Manganese Ore*, from Col. Wm. McClintic.
3. *Red and Brown Iron Ores*, from J. C. Harvey, Esq.
4. *Kaolin*,
5. *Ochre*, deep red, from deposit on land of Mrs. M. M. Bratton on Mill Creek, near C. & O R. R. Contributed by Rev. Samuel Brown, Millboro.'

BLAND.

Bland county was formed in 1861 from Wythe, Tazewell and Giles. Seddon is the county seat, and is located in the Walker's creek valley, near the centre of the county, with turnpikes diverging east, west, north and south. Several mountain ranges traverse the county from northeast to southwest, making beautiful and fertile valleys, with rolling hills between, threaded by streams as clear and sparkling as the dews of heaven. These mountains are filled with chromic, hematite, magnetic, paint and specular iron ores, lead, kaolin, ochre, barytes, copper and slate; are covered with a heavy forest of oaks, chestnut, hickory, ash, walnut, poplar, cucumber, lynn, locust, pine, maple, both hard and soft. There is no outlet for this untold wealth that is mountain-bound and locked up where nature formed it. Several railroad lines have been projected, and there are good hopes of some of them being built in the near future.

There are several mineral springs in the county, the most noted of which are Sharon springs and Kimberling springs. The former are seven miles west of Bland courthouse, on the turnpike leading from Wytheville to Jeffersonville. These springs are recommended in scrofulous diseases. At these springs there is a vein of coal eleven feet and 4 inches thick, and said to be of the finest quality.

Kimberling springs are seven miles north of Bland courthouse, ensconced right in the bosom of the mountains, with all the charms that belong to nature in her silent and dreamy mood.

Bland is a grazing county, and her capacity for grazing is being increased every year. She is not far behind the foremost counties in the State in sending off her fine fat bullocks to the eastern markets. The sheep industry is profitable, and is increasing every year, and would increase more rapidly if the cultivation of the miserable dog was abandoned. Horses, mules and hogs of good blood are raised for home use, besides a great many for market.

Population, 5,004. Number of acres of land, 212,272, assessed at \$449,608.

The waters of the eastern portion of the county flow east and empty into New river, while those in the western portion flow west and empty into the Holston river; Sharon springs being the head waters of the Holston river, and are 2,849 feet above the level of the sea.

Wheat, corn, oats, rye and buckwheat are cultivated to perfection; some tobacco raised, though not much. Nearly all the domestic grasses are raised. Blue grass, *poa pratensis*, comes of its own accord, being a native of the soil, and is the king of grasses.

Apples, peaches, pears, plums, cherries and grapes do well when properly attended to. Many varieties of grapes grow wild, some of which make a fine quality of wine.

The county is well watered with the finest of springs, of both lime and free-stone water, and several large creeks, affording plenty of water and the finest sites for all kinds of machinery, with plenty of sand stone, and blue and gray limestone for building purposes.

The finances of the county have been well managed, and the county is out of debt.

The people are sober, industrious, and thriving, possessed with as much energy as the people of any county in the Commonwealth; and be it said to the honor of her citizens, that there is not a bar room in the county, and has not been for years. Her people always extend a welcome hand to all who are seeking homes, or permanent investments, to come into her borders and help build up, and develop her latent wealth hid in the earth, and set the waters to humming to the music of the spindle, and the loom, and the locomotive.

Good churches are found in almost every neighborhood, with as much toleration and as little bigotry as can be found among Christian people elsewhere.

BLAND COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Captain C. R. Boyd.

1. *Brown Iron Ore*, large deposit in No. III; lands of S. H. Newberry.
2. *Specular Iron Ore*, fine quality, from base of No. III; lands of Newberry and others.
3. *Brown Iron Ore*, cubical pseudomorph after pyrites; land of Harman Newberry.
4. *Iron Ores*, from No. X, from south foot of Brushy mountain, near Sharon Springs; lands of Newberry and others.
5. *Coal*, from No. X, proto-carboniferous, near Sharon Springs; lands of Newberry and others.
6. *Red and Brown Iron Ores*, from No. VIII, slates, from Round mountain, Hunting Camp, and Wolf creeks.
7. *Brown Iron Ore*, compact, from rocks overlying No. VII, Oriskany; good for basic process and for cutting into settings.

8. *Fossil, Petraia. Corniculum*, from No. III.
9. *Red and Brown Iron Ores*, splendent from underlying rocks of VII, Round mountain; large deposits; 56 per cent. of metallic iron; 0.06 phosphorus; lands of Peery and Boyd.
10. *Marble*, nearly white, from land of Sam. H. Newberry.
11. *Mineral Water*, from Sharon Alum and Calybeate Spring.
12. *Manganese*, silicide of, from Round mountain, lands of Peery and Boyd.
13. *Brown Iron Ore*, fibrous, from large beds in Round Mountain; lands of Peery and Boyd.
14. *Fossil Iron Ore*, from 20-foot bed of No. V, Round and Garden mountain; lands of Peery and Boyd.

The following from the cabinet of the Virginia Department of Agriculture :

15. *Chert*, in limestone in form of moccason.
16. *Ochre and Iron Ore*, from Iron mountain.
17. *Iron Ore*, red, from Iron mountain.
18. *Tufaceous Marl*.
19. *Lead and Zinc Ores*.
20. *Manganese*.
21. *Barytes*, on limestone.
22. *Feldspar*.

BUCHANAN

was formed in 1858 from Russell and Tazewell. It contains 490,848 acres, assessed at \$367,184. Population, 5,694. It lies on the western slope of the Alleghany mountains and has two of its sides the dividing lines separating Virginia from West Virginia and Kentucky. Much of the surface is rugged and mountainous, but the soil is fertile and well adapted to grass, and its great elevation gives it a moist, cool climate, well suited to grazing and cattle raising. The valleys, especially, are fertile and produce excellent crops of all the cereals. The lands are very low priced, and are held in immense tracts by speculators and persons interested in mining. Minerals exist in vast quantities, and consist mainly in iron ores, coal, and salt undeveloped and waiting for the coming of railroads. With good transportation there would soon be exploited in this county the immense resources of minerals and of timber now lying undeveloped. The cattle business could be cheaply prosecuted on a large scale if the requisite capital was invested in this fine grazing country. This region, for which Nature has done so much, is now attracting attention and cannot long remain cut off from the outer world. An inviting field is offered here for settlers as the lands can now be bought for a tithe of the value they will have when railroads penetrate these rich valleys.

CRAIG

was formed in 1850 from Botetourt, Roanoke, Giles and Monroe, West Virginia. Area, 248,482 acres, assessed at \$564,432; population, 5,894. The surface, like all this section of the State, is rugged and mountainous. The soil is fertile and peculiarly adapted to the growth of rich grasses. Accordingly we find here a pastoral life among the people, and much fine stock. A large proportion of the surface is in original forest of superior timber, as white oak, ash, hickory, maple and other valuable woods. The timber of this section of the country is noted for its

hardness and great strength. The county is watered by Craig's creek, which flows northeast and empties into James river at Sheets in the neighboring county of Botetourt, and by Sinking creek, which flows southeast and empties into New river, in Giles. New river flows north into the Kanawha, a tributary of the Ohio. Thus the waters from a part of this county run to the Atlantic ocean through the James, and from another part, across the water-shed, make their way through the Ohio and Mississippi to the Gulf of Mexico. The minerals consist mainly of iron, manganese and slate. Indications of silver have been found here. Cheap homes and a salubrious and pleasant climate add to the attractions of this section for settlers.

Craig is now somewhat isolated in respect to railroad facilities; but the day is probably not distant when a railway will be constructed along the valley of Craig's creek into the rich coal district of West Virginia. There is probably immense mineral wealth in the mountains of Craig adjacent to the track which nature has marked out for the road.

CRAIG COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Slate*, from Craig's creek, of superior quality and in great quantities.
2. *Manganese*, 7 miles west from New Castle and 2 from preceding.
3. *Manganiferous Iron Ore*, from Kyles on Johns creek, 6 miles northwest from New Castle.
4. *Slate*, 4 specimens from "Custer" quarry on Craig creek, 6 miles southeast from New Castle.
5. *Iron Ore*, from John Goode, 4 miles southeast from New Castle.
6. *Manganese*, 4 large specimens, from "Damewood" mine, from near same locality.
7. *Manganese*, 2 specimens from J. E. Custer's, 6 miles from New Castle.
8. *Slate*, from Jones quarry on Craig creek, 5 miles southwest from New Castle.

DICKENSON

was formed in 1880 from Russell, Wise and Buchanan. It is nearly a parallelogram with two sides of twenty-one miles and the other two of fifteen miles in extent, and contains about 387,000 acres, assessed at \$99,121. No census of the population was taken in 1880, but it is supposed to be about 4,000. It is bounded on the northwest by the Cumberland range of mountains which separate it from Kentucky, and on the southeast by the great Ae mountains. The surface on these borders is very rugged, but in the central parts it has many fine valleys, and much fertile land. The products are wheat, corn, oats, rye, barley, buckwheat, tobacco, flax, melons and grass. Vegetables and fruit are raised in great abundance and of good quality. This is one of the counties of Trans-Appalachia and is in the great grazing region of the southwestern part of Virginia. The lands vary in texture with the character of the prevailing rocks, but the greater part of them are good grass lands. Timber of the most valuable kinds is found here in great abundance—three-fourths of the area being in original forest of oak, hickory, poplar, elm, ash, maple, wild cherry, walnut, pine, &c. The average assessed price of land being little more than 25 cents per acre, this region should afford grand inducements for men with capital to engage in the stock raising business. This county is without railroads. It is watered by the head streams of the Rus-

sell's fork of Big Sandy river flowing north into the Ohio river. The minerals of this county have not been developed, but iron ores and coal (bituminous, splint and cannel) are known to be abundant.

DICKENSON COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Coal*, from Cana creek, contributed by Elijah Rasnick, Sr.

GILES

was formed in 1806 from Montgomery, Tazewell and Monroe, and is now one of the frontier counties of the State, adjoining Mercer and Monroe, in West Virginia. The eastern and western portions of the county are mountainous, both the boundaries being formed by ranges of the Alleghany mountains. Some portions of the county are very fertile, producing fine crops of cereals and grasses. This county is a fine grazing region, and produces some of the finest fat cattle that are sent to the eastern markets. There are several mineral springs in this county, places of popular resort during the heated term, the most noted being the "New River White" and "Hunter's Alum." That wonderful freak of Nature, the so-called "Salt Pond," in the mountains of that name, attracts many visitors.

Giles is watered by New river and its tributaries. The population is 8,794; number of acres of land 229,055, assessed at \$970,558. It abounds in fine growths of the usual timber of this region—walnut, wild cherry, sugar and other maple, oak, &c., and vast beds of iron ores, copper and coal.

In Giles there is found red marble, near Chapman's ferry, and near the base of Angel's Rest mountain. Hydraulic limestone, near Chapman's ferry, contains of carbonate lime 43 per cent., and of carbonate magnesia, about 35 per cent.; silica, 17.30, and 2 per cent. alumina and oxide iron. That a little below Chapman's ferry has 53 per cent. of carbonate lime, and 43 per cent. of magnesia, and 2 per cent. silica, and 0.50 alumina and oxide iron. These are highly hydraulic.

The branch road of the Norfolk and Western railroad from Central station, on the borders of Montgomery and Pulaski, passes nearly due north through the northeast end of Pulaski, and through the centre of Giles to the West Virginia line, and through Mercer county, West Virginia, in a southwest course to Graham and Pocahontas, in Tazewell, and is to be extended into the central parts of the last county, where it will tap one of the finest mineral and timber regions in the world. Before this road was made the county of Giles labored under great disadvantages, but will now feel the effects of being brought in easy reach of the markets of the world, and will reap rich fruits from her valuable mineral and forest wealth so long shut up among her hills and valleys. There is here a great opening for immigration, which will not long neglect a region so inviting.

GILES COUNTY MINERALS AT NEW ORLEANS EXPOSITION.

1. *Fossil*, rhusophycus bilobatus, from No. 1, on Little Stony creek; Capt. C. R. Boyd.
2. *Marble*, from Charles H. Snidow, Kimballton.
3. *Red Iron Ore*, from regular stratified bed showing abundance of it; C. W. McClagherty.
4. *Clay and a mug made from it*, of fine quality for refractory purpose; C. W. McClagherty.
5. *Red Iron Ore*, from D. F. Hale, Narrows; metallic iron 68.44 per cent.
6. *Spotted Marble*, from J. H. Hoge.

HIGHLAND

was formed in 1847 from Pendleton and Bath. It is thirty miles long and about twenty-five miles broad, and contains 239,700 acres, assessed at \$804,000. Population, 5,170.

This is an elevated mountain region. The soil is mostly limestone, and produces good crops of corn, wheat, oats, rye, buckwheat and grass. The Kentucky blue grass springs spontaneously wherever the timber is removed, and furnishes the finest pasturage, not inferior to that of the best lands of Kentucky. Grazing and the rearing of horses, cattle, sheep and swine constitute the main reliance of the owners of the soil. There is no place where a living is more easily made, and where the people enjoy more of ease and leisure. The climate is healthy and invigorating, and the people are kind and hospitable.

Valuable timber, especially walnut and wild cherry of the very best quality for cabinet makers' use, is abundant, and when this section shall be endowed with railroad facilities it will constitute a large item of wealth. Iron ore, coal and marble are known to exist in abundance in this county, and probably other valuable minerals will be found when its access to market shall justify more extended explorations.

Monterey, the county seat, and McDowell are the principal villages, and are busy and growing places, notably the former.

This county is drained by the head waters of Cow Pasture and Jackson rivers emptying into the James, and by some of the head streams of the South Branch of Potomac river, which interlace in this elevated water shed of the two river systems, and mark out the track of the great line of railroad which has been projected and will at some day not distant connect Pittsburg with the inexhaustible deposits of iron ore in Alleghany, Botetourt and the adjoining counties, and will quadruple the value of the land of Highland.

LEE

was formed from Russell in 1792. It lies in the southwest corner of the State, bordering on Tennessee and Kentucky. Its greatest length is 65 miles; mean breadth, 10 miles. It contains 365,240 acres, valued at \$1,188,265. Population, 15,114. Three-fifths of the the surface is mountainous or hilly, but the mountains are rich to the top, and a large proportion of the soil of the entire county is very fertile. The timber consists of oak (an immense quantity of *white* oak), poplar, pine, maple, buckeye, birch, beech, ash, cucumber, mulberry, locust, hickory, chestnut, much black walnut, and wild cherry, with vast forests of red cedar, near Powell's river, of the best quality for the manufacture of cedar ware. The productions are corn, wheat, buckwheat, oats, rye and tobacco. The cultivation of tobacco is on the increase. A great variety of vegetables and fruits is produced. It is well watered by Powell's river, which is navigable for flat boats, and giving an outlet for the products of the county. The county is rich in minerals. Poor Valley ridge, which runs parallel to Cumberland mountains through the whole length of the county, has a rich vein of iron ore (dyestone—red hematite) extending throughout the entire length. The Cumberland mountains contain inexhaustible supplies of the best bituminous coal, a part of which is in this county. There are strong indications of zinc, lead and other valuable minerals. Salt has been made at two points in this county, but there are no works now in operation.

About one-half of the area of the county is cleared land, one-tenth of which is in wheat, the remainder in oats, rye, corn, tobacco and grass. This is a fine grass county, and is famous for fine cattle, horses, &c. It has at least 2,500 acres in orchards of every variety of fruit.

LEE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

Collected by Gen. Imboden.

1. *Coal*, from "Imboden" vein 10" thick from Crab orchard, 10 miles west from Big Stone Gap.

2. *Fossil Iron Ore*, Clinton No. V, 2 blocks from Rufus A. Ayers, on north fork Clinch river.

The following are from the Virginia Department of Agriculture :

3. *Fossil Iron Ore*, Clinton, No. V.

4. *Fossil Iron Ore*, Clinton.

5. *Limonite*, brown iron ore.

RUSSELL

was formed in 1786 from Washington. It contains 318,000 acres, valued at \$696,869. Population, 13,914.

The surface is much broken, as the county lies among mountain ranges, and much of the land is not arable, but there are very fine lands in the valleys. Grazing and stock raising is one of the principal industries of the people of Russell. They produce also ample supplies of grain, &c., for man and beast, and are making tobacco of very fine quality.

This is an elevated mountain region, noted for its healthy and bracing climate, and offers, with its cheap grass lands, kept fertile by decomposition of fossil limestones and feldspathic rocks, fine locations for persons desiring to go into the cattle business. The number of fat cattle annually sold amounts to 10,500.

It is drained by Clinch river and tributaries, which afford immense amounts of water-power, and are well stocked with game fishes. Moccasin creek, a tributary of the Holston, waters a considerable portion of its southern part.

The timber of this county is of the most valuable kinds, of large size, and in great abundance. The minerals are iron ores, coal, lead, zinc, barytes, salt, sandstone, limestone and marble, and are found in great abundance, of good quality and easily mined.

This county will be greatly benefited by railroads, which are expected to be constructed in the near future. Three lines of railway are now chartered, which will give to Russell nearly all the facilities it will require. The Richmond and Southwest railway will run thirty miles through the Clinch river section. The Saltville and Coal Mine railroad will cross the county diagonally from southeast to northwest, crossing the iron, marble, coal and timber belts. The Virginia, Kentucky and Ohio railroad has a branch road provided for in its charter which might pursue the line of Clinch river, on its way to Pound Gap.

RUSSELL COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

1. *Splint Coal*, from Lewis Creek; from Captain C. R. Boyd.

2. *Coal*, from Chana creek; contributed by Elijah Rasnick, Sr., of Pat's Store.

The following were contributed by Major W. K. Armistead, of Abingdon :

3. *Marble*, variegated, from base of Clinch mountain.
4. *Bituminous Coal*, from Dump's creek.
5. *Coke*, from Dump's creek coal.
6. *Splint Coal*, from Dump's creek.

SCOTT

was formed in 1814 from Lee, Washington and Russell. The surface is mountainous and rolling, and the soil very good. Copper and Clinch rivers traverse the centre, and the North Fork of Holston the southern part.

Population, 17,235 ; number of acres of land 334,559, assessed at \$702,584.

The productions corn (in very large quantity), wheat, oats, rye, grass, and tobacco. Price of land improved, from \$5 to \$50 per acre ; unimproved, from \$1 to \$5 per acre. This county has great capabilities, and with railroads would ship largely both of the products of the farm and of the mines. Two-thirds of the surface is in timber, consisting of the oaks, poplar, walnut, ash, lynn, beech, sycamore, elm, and box elder. There are 2,000 acres in orchards of apples, peaches, pears, cherries, grapes, &c. There are 80 schools in the county, of which 70 are public, and are in a flourishing condition. There are 75 churches, 35 of which are Methodist, 20 Mission, 10 Hard-shell Baptist, and 10 Free-will Baptist. About 300 immigrants have settled in this county in the last few years. The health and climate are good. This county is a grass county, and raises good stock. It is in the south end of the Valley, acknowledged a fine country.

This county is very rich in minerals, having abundance of iron ores, coal, copper, manganese, marble, and limestone. It has many fine locations for mills and manufacturing establishments on the water courses, with ample power to run any amount of machinery. A railroad through this section would develop great resources.* There are many mineral springs in this county, both sulphur and chalybeate.

In this county is found in great abundance a reddish, fossiliferous *mottled marble*, in which the colors are pleasingly blended with grayish white. The dun-colored and other varieties are also found of fine quality. A correspondent says there is mineral wealth enough in this county to pay the national debt.

SCOTT COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

The following were collected by Gen. Imboden :

1. *Coal*, from 6 to 7' bed, head of Stony creek.
2. *Fossil Iron Ore*, Clinton, from land of W. W. James, near head of Stony creek.
3. *Iron Ore*, brown hematite, from same locality as above.
4. *Tennessee Marble*, brown, block 16x11"x7½", dressed, polished, &c., from near Estilleville, from land of Estilleville Marble Co. Estilleville is located on

* Hitherto there has been no outlet for this—no means of exploiting it ; but now there is a narrow-gauge railroad in course of construction from Bristol, Tenn., to Mineral city, 66 miles distant, tapping some of the richest coal and iron deposits in the United States. Along the whole line is an immense quantity of the finest timber—walnut, wild cherry, poplar, ash, white oak, and pine. The beautiful marble mentioned above is on the line of this road.

this marble, and with it the streets are macadamized and the foundation walls of the houses are built.

5. *Dark Brown Tennessee Marble*, a polished block, from "Bounds" tract of the Estilleville Marble Co., 4 miles west from Estilleville.

6. *Dappled Gray Marble*, a polished block, from land of same Co., 3 miles southwest from Estilleville.

7. *Cherry Spot Marble*, a dressed block, from same locality; &c., as above.

8. *Pebble Marble*, a polished block, from "Bounds" tract, same Co. These specimens of marble are exceedingly beautiful; the quarries from which they came are very extensive, extending for miles along the track of the projected and now partially completed South Atlantic and Ohio railroad.

TAZEWELL

was formed in 1799 from Russell and Wythe. It is sixty miles long with varying width, and contains 336,250 acres of land, assessed at \$1,106,693. Population, 12,861.

The surface is mountainous, but is relieved by fertile valleys, many of them of considerable extent. One of the largest of these valleys, called "Burks Garden," is famed for its beauty and fertility. The soil is mostly limestone and very fertile, the mountains even to their tops being covered with a luxuriant growth of blue grass, which is indigenous here. The favorite and most profitable occupation here is grazing and fattening cattle, many of them being sent across the Atlantic to the markets of Great Britain.

The timber is abundant and of large dimensions. Oak, walnut, cherry, hickory, elm, chestnut, and other trees attain to great size and altitude, and the most valuable timbers are used in the ordinary construction of dwellings.

Tazewell county is rich in minerals, having large deposits of the purest iron ores, coal, salt, gypsum, &c. Coal is being mined in great quantities and shipped by the New river branch of the Norfolk and Western railroad to Norfolk city for the coaling of ocean steamers, for which purpose it is well suited. Pocahontas, close to which is located the principal mine, is a rapidly growing town of some 2,000 inhabitants, and is the present terminus of the New river division of the Norfolk and Western road. The great Flat Top mountain range from which this coal is obtained forms the western border of this county, and is part of the dividing line between Virginia and West Virginia. The iron ores will be developed by the contemplated extension of the branch road alluded to into the central parts of the county.

This county is watered by Clinch river flowing southwest and by tributaries of New river flowing northeast.

TAZEWELL COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

From Capt. C. R. Beyd.

1. *Red Shale Iron Ore*, fine quality, from Paint Lick Mine.
1. *Semi-Bituminous Coal*, a complete section 12' thick, from Pocahontas Mine.
2. *Semi-Bituminous Coal*; samples from Pocahontas Mine.
3. *Coke*, made at Pocahontas from above coal.

The following are from the Virginia Department of Agriculture :

4. *Fossil*, in limestone.
5. *Iron*, smelted from Poor Valley ore in a common smith's forge ; J. R. Witten.
6. *Limonite Iron Ore*, from Poor Valley—from Harvey Peets.
7. *Fossil Iron Ore*.
8. *Red Iron Ore*, magnetic.
9. *Limonite*, brown iron ore.
10. *Manganese*, ore.

WISE

was formed in 1855 from Lee, Scott and Russell counties. It has 310,000 acres of land, assessed at \$186,000, or sixty cents per acre. Population in 1880 was 7,782, but a part of this is to be credited to Dickenson county, a portion of which was taken from Wise since the last census.

Wise county lies on the Kentucky line, and is located amongst the lofty ranges of mountains which traverse this Trans-Appalachian country.

The soil, in some parts formed from limestone rocks, is of good quality and well adapted to grains and grass. Other sections, formed from disintegrated sandstone, have poorer soils, but the lands produce corn, vegetables and fruits, and are well suited to the grape, and to pasturage, especially of sheep.

The greater part of the area of Wise county is still covered with original forests of valuable timber, such as oak, chestnut, walnut, poplar, cherry, pine, &c. The cherry is notably abundant and of large size, and poplar trees of enormous size, some of them six and eight feet in diameter, with long, straight trunks seventy-five to eighty feet to the limbs.

The minerals of this county are iron ores, coal (bituminous, splint and cannel) in great abundance and easily mined. Lead and silver have also been found, but not yet in paying quantity. Limestone and valuable sandstone for building are abundant.

This county is watered by several considerable streams flowing into Russell's fork of Big Sandy river, and by Powell's river and other streams which flow south into Clinch river.

The great need of this section is access to market for its very valuable timber and minerals, which, it is hoped, will soon be supplied by the construction of the several railroads projected through this country.

WISE COUNTY MINERALS AT THE NEW ORLEANS EXPOSITION.

The following specimens were collected by Gen. John D. Imboden :

1. *Coking Coal*, a block 15" cube, from "Gibbs" opening in the "Imboden" bed, 8" thick, on Preacher Fork of Callaghan creek, on lands (72,000 acres) of the Va. Coal and Iron Co.
2. *Coke*, made from above coal.
3. *Splint Coal*, from Shelving-rock bed, 4½" thick, from southeast face of Black mountain, from the property of the Va. Coal and Iron Co.
4. *Splint Coal*, long block, from same bed as No. 3, the property of same Co.
5. *Cannel Coal*, from upper bench, 26" thick, of 7' bed in Black mountain, property of same Co.

6. *Coal*, from "Imboden" bed, where 10' thick, on Roaring fork of Powell river, on Nine-mile ridge of Black mountain, on land of J. P. Imboden.

7. *Red Shale Iron Ore*, from No. V, Clinton, from "Horton" tract of Va. Iron and Coal Co., on northwest face of Wallen ridge, one mile from Big Stone gap.

8. *Iron Ore*, brown, "Wildcat" mine, on "Collier" tract of Va. Iron and Coal Co., in valley at head of Wildcat creek.

9. *Iron Ore*, fossil of No. V, Clinton, from 1,050 acres, tract of Col. Frank Preston, in southwest end of Wallen ridge, near south fork of Powell river.

10. *Cannel Coal*, from near Pound fork of Big Sandy river.

TABLE No. 7.

Live Stock—Commissioners of Revenue Returns for 1884.

COUNTIES.	Horses, Mules, Asses and Jennets.	Cattle.	Sheep.	Hogs.
Accomac.....	4,145	7,944	2,829	15,644
Albemarle.....	5,612	10,508	11,276	13,661
Alleghany.....	974	2,884	1,681	2,395
Alexandria.....	549	629	12	616
Amelia.....	1,376	3,144	1,800	3,456
Amherst.....	2,749	5,154	2,056	2,634
Appomattox.....	1,446	3,365	1,659	4,280
Augusta.....	3,489	13,880	11,557	13,496
Bath.....	853	2,754	3,440	2,545
Bedford.....	5,423	10,746	10,080	15,574
Bland.....	1,483	4,479	6,332	4,062
Botetourt.....	3,211	6,622	3,601	7,520
Brunswick.....	2,215	7,598	3,872	8,613
Buchanan.....	793	3,799	4,629	6,550
Buckingham.....	1,564	4,148	2,582	2,751
Campbell.....	2,916	5,514	2,062	7,150
Caroline.....	2,379	5,006	2,471	8,656
Carroll.....	1,919	3,622	7,792	3,323
Charles City.....	963	1,625	1,426	3,169
Charlotte.....	2,150	6,247	3,260	5,898
Chesterfield.....	1,670	3,750	3,794	6,657
Clarke.....	2,312	6,808	2,016	4,028
Craig.....	1,140	3,562	2,963	1,902
Culpeper.....	2,429	10,086	14,711	7,611
Cumberland.....	1,412	3,177	1,960	4,681
Dickinson.....	675	3,028	4,369	4,470
Dinwiddie.....	1,309	4,117	2,484	5,112
Elizabeth City.....	800	1,600	800	3,000
Essex.....	1,473	3,993	2,684	4,227
Fairfax.....	1,762	3,553	1,544	2,594
Fauquier.....	6,313	25,950	16,877	15,087
Floyd.....	2,305	3,700	3,060	3,365
Fluvanna.....	1,602	3,356	2,315	4,692
Franklin.....	4,006	2,746	6,473	12,271

TABLE No. 7—CONTINUED.

COUNTIES.	Horses, Mules, Asses and Jennets.	Cattle.	Sheep.	Hogs.
Frederick.....	4,541	8,689	12,221	7,990
Giles.....	1,844	5,106	5,432	3,106
Gloucester.....	1,614	4,616	2,699	5,516
Goochland.....	1,492	3,023	1,860	3,054
Grayson.....	2,906	7,985	10,894	6,788
Greene.....	1,218	2,044	1,568	3,428
Greshamsville.....	1,097	2,473	940	4,292
Halifax.....	3,816	7,011	3,142	12,986
Hanover.....	3,800	4,650	2,618	6,481
Henrico.....	1,877	2,229	896	3,853
Henry.....	2,095	4,116	2,402	5,778
Highland.....	1,989	7,779	10,018	3,298
Isle of Wight.....	2,026	3,412	1,235	15,884
James City.....	622	1,883	1,024	1,969
King and Queen.....	1,394	4,995	2,523	4,989
King George.....	1,575	3,145	2,399	3,060
King William.....	1,467	2,709	2,092	3,066
Lancaster.....	832	2,332	1,137	2,937
Lee.....	3,834	9,386	9,560	16,672
Loudoun.....	7,815	22,787	23,901	12,864
Louisa.....	2,518	6,967	3,408	7,463
Lunenburg.....	1,554	5,071	2,447	6,079
Madison.....	2,349	6,834	3,559	7,650
Mathews.....	765	2,320	1,045	3,850
Mecklenburg.....	3,262	9,083	5,333	9,921
Middlesex.....	824	2,229	1,529	3,832
Montgomery.....	2,426	6,261	4,753	6,395
Nansemond.....	2,343	4,016	1,155	12,305
Nelson.....	2,770	5,400	2,336	7,757
New Kent.....	923	1,337	637	2,775
Norfolk.....	2,866	1,880	642	6,859
Northampton.....	1,525	2,513	1,495	5,693
Northumberland.....	1,191	4,031	1,353	3,913
Nottoway.....	1,249	3,423	1,953	3,850
Orange.....	2,695	6,264	2,491	6,391
Page.....	2,391	5,079	3,200	6,459
Patrick.....	1,610	4,510	3,341	6,915

TABLE No. 7—CONTINUED.

COUNTIES.	Horses, Mules, Asses and Jennets.	Cattle.	Sheep.	Hogs.
Pittsylvania	5,982	6,969	4,158	15,791
Powhatan	1,183	2,754	2,488	3,450
Prince Edward	1,505	3,576	1,407	4,498
Prince George	1,475	1,238	789	3,386
Princes Anne	2,068	4,060	4,023	11,266
Prince William	2,488	6,602	7,271	5,068
Pulaski	1,764	6,087	5,040	5,708
Rappahannock	2,262	8,068	6,138	4,574
Richmond	985	3,736	1,568	4,892
Roanoke	2,392	4,585	2,292	5,628
Rockbridge	4,765	10,331	5,297	8,124
Rockingham	7,926	18,997	7,418	17,524
Russell	3,674	13,268	12,635	11,248
Scott	4,169	9,251	12,681	17,046
Shenandoah	3,812	9,556	4,560	9,433
Smyth	2,730	7,594	7,966	6,668
Southampton	2,716	5,550	2,261	13,391
Spotsylvania	1,733	4,320	2,684	4,181
Stafford	1,621	3,734	2,308	4,231
Surry	1,358	1,848	605	4,682
Sussex	1,805	2,398	1,135	6,044
Tazewell	3,198	12,321	15,201	8,600
Warren	1,842	4,104	4,208	2,399
Warwick	294	1,084	268	1,481
Washington	4,556	9,495	11,955	8,465
Westmoreland	1,223	4,988	2,101	4,895
Wise	1,017	3,668	5,149	6,511
Wythe	3,188	8,804	8,882	8,688
York	666	2,317	459	1,735

TABLE No. 8.

General Statistics of Agriculture for the State of Virginia at Censuses of 1880 and 1870.

FARMS.		FARMS—NUMBER OF EACH SPECIFIED CLASS.			
Total Number.		Under 3 Acres.		3 and under 10.	
1880.	1870.	1880.	1870.	1880.	1870.
118,517	73,849	101	137	7,019	4,493

FARMS—NUMBER OF EACH SPECIFIED CLASS.							
10 and under 20.		20 and under 50.		50 and under 100.		100 and under 500.	
1880.	1870.	1880.	1870.	1880.	1870.	1880.	1870.
9,663	6,800	19,323	16,891	22,194	17,208	53,101	26,696

500 and under 1,000.		1,000 and over.		Total Land in Farms.	
1880.	1870.	1880.	1870.	1880—Acres.	1870—Acres.
75,973	15,873	28,573	3,790	19,335,735	13,145,911

Improved Land in Farms.		Unimproved Land in Farms.		Percentage of Unimproved Land in Farms to Total Land in Farms.	
1880.	1870.	1880.	1870.	1880.	1870.
Acres.	Acres.	Acres.	Acres.		
8,510,113	8,165,640	11,325,673	9,990,371	57.1	55.

Average Size of Farms.				Value of Farms.		Value of Farming Implements and Machinery.	
1880.	1870.	1880.	1880.	1880.	1870.	1880.	1870.
Acres.	Acres.	Acres.	Acres.	Dollars.	Dollars.	Dollars.	Dollars.
167	246	324	340	216,093,107	213,090,845	5,495,114	4,924,036

TABLE No. 8—CONTINUED.

BARLEY.		BUCKWHEAT.		INDIAN CORN.	
1880. Bushels.	1870. Bushels.	1880. Bushels.	1870. Bushels.	1880. Bushels.	1870. Bushels.
14,223	7,369	136,004	45,075	29,119,761	17,649,304
OATS.		RYE.		WHEAT.	
1880. Bushels.	1870. Bushels.	1880. Bushels.	1870. Bushels.	1880. Bushels.	1870. Bushels.
5,333,181	6,567,555	324,431	532,264	7,396,174	7,398,787
COTTON.		WOOL.		HAY.	
1880. Bales.	1870. Bales.	1880. Pounds.	1870. Pounds.	1880. Tons.	1870. Tons.
79,595	183	1,886,673	877,110	287,255	199,833
HOPS.		TOBACCO.		IRISH POTATOES.	
1880. Pounds.	1870. Pounds.	1880. Pounds.	1870. Pounds.	1880. Bushels.	1870. Bushels.
1,599	10,999	79,983,863	37,036,364	2,616,766	1,298,963
SWEET POTATOES.		VALUE OF LIVE STOCK.		HORSES.	
1880. Bushels.	1870. Bushels.	1880. Dollars.	1870. Dollars.	1880. Number.	1870. Number.
1,901,521	865,382	29,953,315	23,187,669	215,833	152,399

TABLE No. 8—CONTINUED.

MULES AND ASSES.		WORKING OXEN.		MILCH COWS.	
1890. Number.	1870. Number.	1890. Number.	1870. Number.	1890. Number.	1870. Number.
38,598	26,908	54,709	45,987	388,414	277,285

OTHER CATTLE.		SHEEP.		BUTTER. Sold.		CHEESE. Sold.	
1890. Number.	1870. Number.	1890. Number.	1870. Number.	1890. Pounds.	1870. Pounds.	1890. Pounds.	1870. Pounds.
388,414	277,285	956,451	674,670	85,535	74,743	85,535	71,743

TABLE No. 9.

Showing the Number of Farms, the Acres of Improved Land, and Farm Values for 1880.

FARMS.	Improved Land.	Value of Farms, including land, fences, and buildings.	Value of Farming Implements and Machinery.	Value of Live Stock on Farms June 1, 1880.	Cost of building and repairing Fences.	Cost of Fertilizers purchased for 1879.	Estimated Value of all Farm Productions (sold, consumed or on hand) for 1879.
	Acres.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Number. 118,517	8,510,113	216,028,107	5,495,114	28,983,315	1,697,180	2,187,983	45,794,221

TABLE No. 10.

Farm Areas and Farm Values, 1880—By Counties.

COUNTIES.	Farms.	Improved Land.	Value of Farms, including land, fences and buildings.	Value of farming implements and machinery.	Value of live stock (on farms June 1, 1880.)	Cost of building and repairing fences, 1879.	Cost of fertilizers purchased 1879.	Estimated value of all farm productions (sold, consumed or on hand) for 1879.
	Numbr	Acres.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Total.....	118,517	8,510,118	216,028,107	5,495,114	25,953,315	1,697,180	2,187,288	45,796,221
Accomac	2,145	84,160	3,597,251	82,154	283,089	23,924	83,452	688,963
Albemarle.....	2,099	244,395	6,015,726	124,260	545,213	38,491	80,653	898,983
Alexandria...	325	9,028	903,980	14,175	37,281	4,923	9,086	187,913
Alleghany	344	30,191	686,418	15,267	99,531	3,638	602	112,415
Amelia.....	1,038	87,368	1,140,301	30,465	181,631	5,752	12,382	810,995
Amherst.....	1,679	102,928	2,540,453	52,521	279,889	20,838	9,085	629,522
Appomattox..	999	63,164	1,132,889	35,849	135,408	10,332	14,172	322,579
Augusta.....	2,357	246,543	19,082,679	282,840	980,516	67,716	82,150	1,877,695
Bath.....	397	38,617	1,184,906	22,058	154,784	12,106	333	127,549
Bedford.....	2,777	193,591	4,438,845	118,047	536,975	33,734	16,992	1,126,671
Bland.....	584	45,364	1,095,911	21,579	163,940	11,108	2,830	140,547
Botetourt.....	997	93,019	2,388,345	66,836	240,002	18,433	7,379	414,863
Brunswick....	1,453	98,444	1,090,073	34,989	221,645	13,006	23,286	483,744
Buchanan.....	926	22,330	327,794	8,671	144,723	6,111	.....	151,211
Buckingham..	1,668	85,740	1,406,919	40,576	213,345	9,701	11,855	361,525
Campbell.....	1,407	93,340	2,147,709	71,314	275,753	27,659	30,333	709,736
Caroline.....	1,654	137,006	2,080,961	129,671	249,927	14,196	12,232	493,265
Carroll	1,635	114,636	1,566,061	35,533	273,223	17,369	791	309,906
Charles City..	564	36,191	700,443	24,148	38,891	3,055	1,471	153,332
Charlotte.....	1,053	88,669	1,932,112	46,314	216,768	14,086	30,046	631,333
Chesterfield...	1,753	76,894	2,640,550	64,917	209,319	20,816	9,861	438,193
Clarke	473	81,095	2,780,358	82,113	305,945	22,323	60,422	426,515
Craig.....	493	32,624	815,247	22,639	119,463	5,066	822	192,387
Culpeper.....	1,186	126,049	2,559,351	66,443	339,439	43,013	45,947	452,399
Cumberland...	707	61,338	1,073,324	26,687	139,694	7,669	19,474	264,223

TABLE No. 10—CONTINUED.

COUNTIES.	Farms.	Improved land.	Value of Farms, including land, fences and buildings.	Value of farming implements and Machinery.	Value of live stock (on farms (June 1, 1880.)	Cost of building and repairing fences, 1879.	Cost of fertilizers purchased, 1879.	Estimated value of all farm productions (sold, consumed or on hand) for 1879.
	Numbr	Acres.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Dinwiddie	1,621	92,197	1,448,746	48,939	175,486	14,448	16,851	468,963
Elizabeth City	443	16,339	586,993	28,163	50,683	4,637	4,570	141,858
Essex.....	1,068	82,164	1,264,291	31,871	180,829	14,490	5,641	342,573
Fairfax.....	1,572	95,784	4,364,291	143,186	431,760	23,021	57,018	966,908
Fauquier.....	1,740	296,305	7,358,196	128,914	1,107,689	49,699	115,065	1,020,980
Floyd.....	1,541	104,380	2,110,364	57,218	314,490	25,470	513	561,985
Fluvanna.....	851	56,267	1,122,003	33,576	161,627	2,344	13,503	209,359
Franklin.....	2,415	115,599	2,507,291	71,563	267,681	26,960	13,119	830,548
Frederick.....	1,437	151,568	4,243,413	101,889	434,341	23,824	43,444	702,092
Giles.....	716	64,492	1,764,299	35,272	230,219	12,314	2,332	299,618
Gloucester....	788	49,541	1,336,405	39,908	146,491	13,126	8,201	230,213
Goochland....	1,041	58,142	1,479,754	37,091	150,212	13,215	7,056	272,639
Grayson.....	1,477	108,815	1,887,974	45,377	257,985	19,909	2,334	323,142
Greene.....	565	45,459	630,018	21,704	92,273	8,792	1,334	166,473
Greensville....	881	43,202	778,041	92,669	124,912	9,070	34,207	275,818
Halifax.....	2,468	198,536	4,009,930	102,013	549,127	28,512	73,805	1,419,922
Hanover.....	1,648	125,047	2,245,211	67,205	264,057	19,508	20,527	576,287
Henrico.....	1,130	67,500	2,788,796	86,627	216,473	10,642	17,908	467,943
Henry.....	1,396	61,828	1,362,832	36,436	199,148	12,733	20,234	643,424
Highland.....	480	60,765	2,077,535	25,859	308,934	9,157	119	116,725
Ise of Wight..	1,263	55,509	1,368,137	33,906	157,861	16,557	16,188	519,139
James City....	434	19,492	370,464	13,302	63,292	6,234	3,937	73,733
King & Queen	1,208	93,898	1,266,089	22,447	148,373	6,400	3,622	282,650
King George..	736	64,378	1,157,752	28,491	135,153	14,109	9,830	242,372
King Wm.....	735	43,618	1,387,349	35,331	123,622	17,760	11,738	279,452
Lancaster.....	653	25,649	671,527	19,334	77,634	2,338	10,805	100,245
Lee.....	1,636	100,775	2,314,067	56,354	365,308	24,562	394	426,146
Loudoun.....	1,841	232,391	9,531,254	183,227	1,099,900	49,338	138,349	1,466,637
Louisa.....	1,813	106,642	2,084,530	63,355	264,065	17,949	25,521	418,383
Lunenburg....	1,126	43,639	1,004,391	29,687	149,316	13,731	11,293	345,063
Madison.....	816	91,156	1,908,755	64,259	253,907	13,136	14,334	395,332
Mathews.....	902	24,108	999,080	16,508	102,434	4,538	2,373	195,350

TABLE No. 10—CONTINUED.

COUNTIES.	Farms.	Improved Land.	Value of farms, including land, fences and buildings.	Value of farming implements and machinery.	Value of live stock (on farms June 1, 1880).	Cost of building and repairing fences, 1879.	Cost of fertilizers purchased, 1879.	Estimated value of all farm productions (sold, consumed or on hand) for 1879.
	Numb'r	Acres.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Mecklenburg .	1,709	133,300	2,086,683	65,508	300,317	26,575	19,010	709,344
Middlesex	784	33,205	742,386	17,981	51,540	5,259	6,867	88,930
Montgomery ..	1,463	96,830	3,699,023	58,042	306,139	17,588	1,813	451,405
Nansemond...	1,351	65,241	1,597,339	53,543	214,321	19,526	41,730	763,371
Nelson.....	1,300	39,391	1,373,366	46,352	223,150	15,063	4,165	438,397
New Kent.....	436	37,434	533,337	24,340	82,380	15,329	1,772	159,477
Norfolk.....	1,569	63,339	2,909,734	39,512	355,330	12,050	163,367	1,393,693
Northampton.	791	47,227	1,331,950	26,767	132,091	14,032	24,307	239,331
Northumber'd	873	47,259	1,337,468	35,957	124,739	7,443	23,465	176,333
Nottoway.....	965	66,723	1,111,755	33,543	137,014	7,373	10,538	332,306
Orange.....	1,026	93,194	2,021,106	59,313	224,470	11,329	23,351	313,353
Page.....	983	56,343	1,943,333	52,336	206,367	11,761	13,340	277,312
Patrick.....	1,399	52,157	1,062,722	18,305	200,404	7,346	2,509	349,671
Pittsylvania ..	3,502	295,465	4,395,313	130,235	530,567	51,513	112,192	2,120,106
Powhatan	638	53,576	1,156,119	23,367	135,706	8,369	6,705	256,615
Pr. Edward...	1,053	63,327	1,457,130	31,532	143,371	13,239	24,005	427,090
Pr. George....	307	60,131	1,032,611	36,793	114,630	6,133	7,633	391,392
Princess Anne	917	50,643	1,331,106	35,501	153,533	7,966	15,733	346,370
Pr. William...	1,063	74,494	2,169,337	64,133	233,495	12,736	31,554	440,106
Pulaski.....	659	93,137	3,259,436	45,665	313,045	24,713	5,633	327,372
Rappahanno'k	741	101,464	1,990,363	45,629	462,352	12,276	14,436	335,409
Richmond	337	40,322	735,331	17,033	103,012	5,530	11,341	161,071
Roanoke.....	760	32,993	3,597,247	133,555	227,325	21,640	6,629	445,112
Rockbridge...	1,341	164,430	3,941,907	36,064	430,351	24,733	22,314	333,334
Rockingham..	2,567	205,619	3,221,993	210,435	743,216	66,173	33,573	1,140,767
Russell.....	1,350	103,719	2,973,976	43,177	542,304	17,737	2,563	556,275
Scott.....	2,453	114,693	2,020,947	49,397	372,623	15,323	639	403,535
Shenandoah...	1,306	131,497	5,101,533	154,199	519,913	36,173	73,314	350,323
Smyth.....	300	94,364	2,705,137	51,601	353,360	17,309	4,393	327,029
Southampton..	1,643	103,230	1,632,153	52,375	242,005	22,332	71,955	976,430
Spotsylvania..	1,070	52,749	1,409,330	42,243	172,939	8,397	13,117	245,306
Stafford.....	943	45,963	1,113,910	33,200	154,569	10,954	10,415	207,371

TABLE No. 10—CONTINUED.

COUNTIES.	Farms.	Improved Land.	Value of Farms, including land, fences and buildings.	Value of farming implements and machinery.	Value of live stock (on farms June 1, 1890).	Cost of building and repairing fences, 1879.	Cost of fertilizers purchased, 1879.	Estimated value of all farm productions (sold, consumed or on hand) for 1879.
	Numb'r	Acres.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Surry	767	48,066	810,834	87,730	118,564	7,357	7,334	398,134
Sussex	922	71,438	964,396	36,337	148,198	10,053	26,563	453,809
Tazewell	1,323	89,067	2,756,799	47,322	466,779	15,536	2,633	304,989
Warren	579	66,355	1,535,382	39,819	226,961	13,247	20,330	337,291
Warwick	265	6,610	286,255	6,327	45,077	1,422	1,904	35,866
Washington ..	1,583	136,244	2,541,146	68,468	419,993	28,113	4,902	577,853
Westmoreland.	708	63,000	964,045	25,365	115,441	10,953	15,275	197,971
Wise	1,145	40,602	733,362	14,543	155,793	13,106	159	151,245
Wythe	917	132,340	3,710,778	62,239	453,825	16,495	6,693	438,404
York	906	29,408	471,269	19,309	77,488	4,599	2,900	124,415

TABLE No. 11.

Summary of the Principal Vegetable Productions for 1880.

BARLEY.		BUCKWHEAT.		INDIAN CORN.		OATS.		RYE.		WHEAT.	
Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
859	14,223	16,463	136,004	1,768,177	99,119,931	583,443	5,833,181	48,746	894,431	901,177	7,896,174
VALUE OF ORCHARD PRODUCTS.		HOPS.		COTTON.		TOBACCO.		POTATOES.		PEANUTS.	
HAY.		Acres.		Acres.		Acres.		Irish.		Sweet.	
Tons.	Pounds.	Acres.	Pounds.	Acres.	Bales.	Acres.	Pounds.	Bushels.	Bushels.	Bushels.	Bushels.
1,609,663	327,255	12	1,599	45,049	19,595	140,791	79,938,863	2,016,766	1,901,521		1,550,000

TABLE

Principal Vegetable Pro

COUNTIES.	CERIALS.									
	Barley.		Buckwheat.		Indian Corn.		Oats.		Rye.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Total....	859	14,228	14 463	136,004	1,768,127	29,119,761	563,443	38,181	48,746	324,431
Accomac.....					42,331	508,339	6,947	38,384	60	411
Albemarle.....			55	649	85,294	714,715	17,488	139,451	285	1,671
Alexandria.....			29	275	1,584	85,017	186	2,767	159	1,539
Alleghany.....			121	895	4,548	95,011	2,726	34,981	58	232
Amelia.....			9	25	16,112	176,685	8,487	74,598		
Amherst.....			94	999	22,323	404,680	12,785	112,661	170	1,276
Appomattox.....					10,542	149,487	8,226	50,488	6	18
Augusta.....	182	3,733	196	1,791	31,324	727,235	8,570	192,337	1,955	16,000
Bath.....			220	1,963	4,427	90,845	1,437	90,927	820	2,196
Bedford.....			88	660	29,595	591,627	22,489	223,827	202	1,810
Bland.....			309	2,201	5,344	104,243	1,954	28,753	479	3,433
Botetourt.....	27	226	123	1,037	13,379	282,313	7,858	92,107	110	762
Brunswick.....					24,117	272,208	10,631	65,619	12	90
Buchanan.....			69	447	14,871	162,058	2,132	29,109	553	3,263
Buckingham.....			16	93	20,592	269,081	11,297	73,863	68	477
Campbell.....			18	134	19,704	316,806	13,188	120,084	79	412
Caroline.....			9	62	41,385	486,453	2,966	17,582	618	2,965
Carroll.....			2,008	14,544	16,229	241,912	7,140	74,509	6,155	23,138
Charles City.....					9,614	119,791	2,667	30,400	13	107
Charlotte.....			7	65	19,438	311,579	10,829	77,799	54	617
Chesterfield.....	5	23	73	720	20,817	245,654	10,708	79,697	83	499
Clarke.....			28	202	12,343	363,436	922	16,738	133	1,034
Craig.....			326	2,526	4,499	85,376	2,135	27,102	656	4,598
Culpeper.....			25	189	21,169	415,434	4,736	41,744	170	826
Cumberland.....			8	103	10,985	148,019	6,029	37,673	38	256
Danville.....					22,720	214,160	7,907	45,385	39	187
Elizabeth City.....					5,972	71,160	463	5,553		
Essex.....					23,429	312,401	1,579	13,602	462	2,336
Fairfax.....			357	4,630	16,660	381,702	3,414	50,771	699	6,172
Fauquier.....			150	1,312	38,277	875,370	5,383	60,383	779	4,293
Floyd.....			2,431	17,898	13,449	226,574	9,521	130,370	3,247	30,378

No. 12.

ductions for 1880.

Wheat.		Value of Orchard Products.	Hay.	Hops.	Cotton.		Potatoes.		Tobacco.	
Acres.	Bushels.	Dollars.	Tons.	Pounds.	Acres.	Bales.	Irish. Bushels.	Sweet. Bushels.	Acres.	Pounds.
901,177	7,826,174	1,609,668	287,255	1,599	45,040	12,595	2,016,766	1,901,531	140,791	79,985,968
1,384	17,219	20,511	1,584	.....	.....	.....	217,574	491,790	.....	.....
25,806	186,093	53,289	8,741	.....	.....	.....	23,972	7,981	3,216	2,466,972
366	5,094	7,685	1,329	.....	.....	.....	11,688	11,525	.....	.....
3,760	23,332	3,996	1,210	.....	.....	.....	2,768	46	11	6,862
5,996	51,919	11,287	697	.....	.....	.....	3,085	5,090	8,524	1,796,317
12,308	94,940	26,437	1,953	.....	.....	.....	17,615	11,059	4,610	3,111,801
5,685	37,974	12,074	682	.....	.....	.....	8,681	9,988	3,198	1,965,987
44,966	532,341	56,053	29,931	.....	.....	.....	33,923	1,680	4	1,327
3,462	26,557	5,969	2,394	.....	.....	.....	6,761	186	8	5,815
23,927	153,308	50,155	6,744	.....	.....	.....	34,172	27,215	9,174	5,315,560
4,389	25,572	5,916	2,673	.....	.....	.....	3,958	20	10	4,164
18,763	105,537	19,731	5,350	.....	.....	.....	12,923	769	1,187	742,953
5,575	50,874	5,150	277	.....	6,800	2,960	5,229	20,130	2,736	1,532,161
1,246	7,816	9,515	50	.....	.....	.....	7,393	6,701	10	2,186
8,965	57,108	9,562	324	.....	.....	.....	5,555	10,024	3,973	2,136,529
9,830	58,987	26,250	1,953	.....	.....	.....	12,032	11,686	6,446	3,927,333
11,654	77,306	21,641	970	.....	.....	.....	20,519	23,355	1,264	991,487
5,565	4,599	13,914	7,073	.....	.....	.....	20,424	6,267	83	29,375
4,384	51,043	133	642	.....	.....	.....	282	795	.....	.....
6,997	65,301	12,932	919	.....	.....	.....	8,665	8,668	5,922	3,226,448
6,092	57,577	15,630	1,626	.....	.....	.....	11,916	23,578	804	523,696
18,182	265,549	21,045	4,674	.....	.....	.....	9,724	786	10	9,555
4,042	21,837	4,846	1,512	.....	.....	.....	2,919	495	58	33,540
15,882	106,551	17,997	6,229	.....	.....	.....	6,728	2,598	6	2,470
5,926	41,317	565	540	.....	.....	.....	491	404	2,979	1,814,674
5,310	45,255	13,302	856	.....	6,500	2,500	8,463	17,535	2,752	1,540,395
1,994	18,261	4,092	118	.....	.....	.....	40,223	24,723	.....	.....
9,559	70,230	12,483	334	.....	.....	.....	8,529	20,863	13	5,015
9,238	106,533	64,589	9,761	.....	.....	.....	71,765	13,014	4	5,370
24,555	263,953	35,633	8,897	.....	.....	.....	25,595	3,131	17	6,077
8,944	46,263	23,582	6,321	.....	.....	.....	11,634	1,490	327	342,250

TABLE No. 12—

COUNTIES.	CEREALS.									
	Barley.		Buckwheat.		Indian Corn,		Oats.		Rye.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Fluvanna.....	5	25	11,351	906,094	5,724	36,185	21	93
Franklin.....	165	1,573	94,097	450,021	16,524	180,756	375	2,273
Frederick.....	977	9,561	17,711	444,295	3,019	45,573	1,746	11,634
Giles.....	230	2,542	9,342	236,291	2,223	31,435	657	4,337
Gloucester.....	20	40	.....	.....	14,133	177,610	2,600	20,202	71	538
Goochland.....	6	34	17	71	13,876	207,856	6,649	53,443	54	461
Grayson.....	942	7,035	14,273	253,302	4,711	63,920	4,648	31,335
Greene.....	40	390	6,660	153,954	2,238	22,109	547	3,301
Greensville.....	12,745	145,674	1,357	13,525	.....	.....
Halifax.....	43,725	651,766	22,087	194,433	69	500
Hanover.....	22	170	30,630	356,283	11,347	86,381	95	776
Henrico.....	20	400	.....	.....	17,329	301,661	3,024	87,303	154	1,596
Henry.....	14,768	247,532	3,877	33,488	203	1,303
Highland.....	826	3,720	2,772	55,190	747	11,065	422	3,641
Isle of Wight.....	13,033	223,993	1,563	16,447	7	35
James City.....	6,231	66,774	1,061	7,311	12	81
King and Queen.....	21,232	262,546	1,334	10,526	211	1,150
King George.....	20,318	296,075	355	4,536	78	330
King William.....	16,944	213,184	2,434	13,206	94	363
Lancaster.....	6,723	73,243	395	2,315	.....	.....
Lee.....	79	714	30,267	622,763	3,426	32,305	332	6,402
Loudoun.....	232	2,333	36,464	1,113,204	2,764	33,510	600	5,403
Louisa.....	8	79	23,307	303,563	11,329	59,254	40	277
Lunenburg.....	5	25	.....	.....	14,595	179,087	3,273	61,701	12	55
Madison.....	7	92	14,614	399,100	2,350	25,326	553	4,000
Matthews.....	10,023	146,184	795	7,231	13	154
Mecklenburg.....	13	109	.....	.....	34,263	462,512	15,311	135,345	73	439
Middlesex.....	9,625	93,433	563	3,211	47	163
Montgomery.....	970	7,027	15,697	332,709	5,576	79,121	990	5,419
Nansemond.....	36	410	25,750	230,354	2,147	22,647	24	193
Nelson.....	132	2,466	13,240	346,035	7,303	65,139	749	5,549
New Kent.....	9,391	121,910	3,334	29,090	40	300
Norfolk.....	31,171	403,349	1,459	13,443	5	50
Northampton.....	22,992	203,453	7,140	43,415	.....	.....
Northumberland.....	40	330	8	123	13,965	134,976	633	5,539	19	124

CONTINUED.

Wheat.		Value of Orchard Products.	Hay.	Hops.	Cotton.		Potatoes.		Tobacco.	
Acres.	Bushels.	Dollars.	Tons.	Pounds.	Acres.	Bales.	Irish. Bushels.	Sweet. Bushels.	Acres.	Pounds.
7,023	47,990	11,161	1,048	.....	.....	.....	4,707	6,097	1,891	917,561
16,756	104,468	37,535	3,376	.....	.....	.....	24,178	17,307	6,563	3,529,533
22,063	260,413	31,052	9,499	.....	.....	.....	29,688	1,790	1	705
7,773	46,517	10,340	2,224	.....	.....	.....	7,143	468	199	122,056
4,314	30,907	7,310	535	.....	.....	.....	19,513	20,656	25	13,329
8,260	73,738	9,947	1,994	.....	.....	.....	6,511	6,904	1,053	656,624
7,998	53,510	7,268	3,431	.....	.....	.....	11,515	2,084	33	10,485
5,423	40,269	7,436	1,189	.....	.....	.....	2,873	1,494	529	332,492
461	3,493	5,413	115	.....	3,500	4,100	5,291	18,956	11	5,075
16,450	138,259	31,077	416	.....	.....	.....	17,940	23,174	15,043	7,653,543
13,146	101,765	17,104	1,794	.....	.....	.....	13,580	122,343	1,480	1,064,735
7,559	90,365	23,331	2,323	.....	.....	.....	36,359	18,690	106	101,155
7,951	45,170	7,295	831	.....	.....	.....	4,995	5,756	6,236	2,955,086
2,547	23,638	3,331	5,042	.....	.....	.....	7,641	111	1	567
141	1,547	13,334	9	.....	350	400	33,374	52,936	5	420
1,031	9,315	6,178	235	.....	.....	.....	1,159	4,735	.....	.....
5,260	34,071	5,756	36	.....	30	20	3,214	17,901	30	14,711
5,790	40,487	7,514	211	.....	.....	.....	4,641	4,967	20	9,775
3,542	73,476	9,900	751	.....	.....	.....	20,099	13,395	97	63,065
2,316	25,413	2,731	330	.....	.....	.....	6,798	3,715	.....	.....
13,222	94,312	25,139	2,329	.....	.....	.....	15,736	13,459	54	15,236
25,230	501,607	49,639	12,070	.....	.....	.....	31,150	3,191	6	2,454
11,923	72,354	31,430	1,374	.....	.....	.....	9,160	12,194	2,973	1,926,483
4,151	33,124	14,019	301	.....	.....	.....	3,362	10,059	3,409	1,976,265
12,534	104,691	15,376	4,135	.....	.....	.....	14,959	5,277	132	101,697
1,598	12,473	6,533	30	.....	.....	.....	13,269	26,413	.....	.....
10,543	86,303	17,343	592	.....	2,150	975	16,680	34,564	6,439	3,436,403
3,030	17,967	5,149	59	.....	.....	.....	3,240	3,437	4	1,512
12,271	69,701	11,393	4,630	.....	.....	.....	9,572	1,343	1,333	654,496
407	5,436	13,670	160	.....	1,960	300	133,544	97,830	1	215
10,690	86,306	16,733	2,536	.....	.....	.....	9,103	3,539	3,497	2,660,295
2,970	21,535	2,757	217	.....	.....	.....	3,730	24,446	14	11,860
63	442	13,642	2,316	.....	.....	.....	233,467	100,329	.....	.....
95	997	2,347	33	.....	.....	.....	197,323	121,667	12	1,740
6,304	57,099	5,337	529	.....	.....	.....	2,334	13,333	11	6,745

TABLE No. 12—

COUNTIES.	CEREALS.									
	Barley.		Buckwheat.		Indian Corn.		Oats.		Rye.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Nottoway			7	68	13,187	182,707	8,447	54,989	56	273
Orange					16,344	346,085	4,448	88,738	104	558
Page			290	1,900	9,385	205,482	941	11,250	2,275	15,160
Patrick			314	2,349	15,786	262,188	7,647	98,235	1,288	9,886
Pittsylvania					40,477	618,186	30,014	248,446	149	663
Powhatan					10,856	152,060	6,850	48,246	30	308
Prince Edward			18	185	14,446	193,482	7,664	59,870	11	65
Prince George			8	70	16,186	188,638	5,958	54,295	.....	.....
Princess Anne					28,878	306,692	1,188	18,451	15	300
Prince William			302	1,925	14,829	281,474	3,519	37,788	265	1,720
Pulaski	24	252	580	3,812	10,256	155,989	2,561	36,825	531	3,124
Rappahannock			250	2,091	13,784	330,978	2,620	31,946	1,080	4,980
Richmond			54	471	13,712	157,107	822	2,164	358	1,628
Roanoke			150	1,188	9,464	197,274	4,802	59,588	500	3,522
Rockbridge	244	3,644	225	2,254	18,938	432,645	5,862	69,593	451	3,329
Rockingham	286	4,838	332	2,778	28,938	687,384	4,127	54,883	2,420	19,230
Russell			286	2,017	19,080	419,106	5,619	46,117	732	4,873
Scott			266	1,862	30,456	529,968	11,457	72,698	438	2,291
Shenandoah	17	317	220	1,940	17,993	440,847	1,941	27,450	1,901	16,602
Smyth			255	2,027	12,692	325,055	5,586	99,697	351	3,028
Southampton					36,012	390,968	1,417	15,061	341	2,600
Spotsylvania			44	522	18,201	241,142	3,912	33,249	67	374
Stafford			49	524	15,434	216,383	2,265	15,161	32	159
Surry					9,913	34,616	1,930	10,675	.....	.....
Sussex			10	85	13,746	103,686	2,871	25,337	54	371
Tazewell			316	2,275	14,688	337,488	5,031	33,622	929	6,642
Warren			64	446	9,663	244,459	1,862	16,149	908	6,437
Warwick			26	550	5,622	70,519	822	3,775	.....	.....
Washington	11	62	425	3,372	24,543	536,501	12,582	169,180	209	1,360
Westmoreland			5	65	17,743	216,468	1,255	8,668	42	321
Wise			337	2,674	12,068	217,266	2,326	17,200	1,289	6,513
Wythe	9	90	264	1,997	13,305	295,484	5,951	112,616	777	4,967
York					8,693	104,326	725	6,886	.....	.....

CONTINUED.

Wheat.		Value of Orchard Products.	Hay.	Hops.	Cotton.		Potatoes.		Tobacco.	
Acres.	Bushels.	Dollars.	Tons.	Pounds.	Acres.	Bales.	Irish. Bushels.	Sweet. Bushels.	Acres.	Pounds.
5,652	47,508	15,665	241	.....	.....	.....	5,347	9,569	2,911	1,582,670
10,536	73,102	12,581	3,244	.....	.....	.....	3,180	1,812	372	260,715
12,806	122,683	16,929	2,471	.....	.....	.....	16,511	2,608	8	5,287
4,324	23,797	14,976	949	.....	.....	.....	24,815	21,008	1,645	714,073
16,790	112,214	31,753	1,123	.....	.....	.....	20,376	23,145	22,690	12,271,533
5,363	51,314	14,069	753	.....	.....	.....	4,023	4,459	1,479	914,132
5,195	45,838	15,217	1,100	.....	.....	.....	5,319	6,323	4,257	2,462,326
3,047	33,447	4,295	550	.....	1,900	700	4,085	10,925	27	20,500
109	790	8,469	455	.....	.....	.....	44,005	49,092		
8,100	65,964	13,393	2,495	.....	.....	.....	12,063	1,621	5	1,222
7,105	41,594	9,593	4,367	.....	.....	.....	5,254	271	211	122,776
8,917	64,716	19,236	4,217	.....	.....	.....	11,171	1,984	12	2,330
5,788	42,926	8,576	391	900	.....	.....	2,477	10,443	14	7,322
17,073	172,469	20,163	5,629	.....	.....	.....	8,534	1,451	1,022	535,410
24,144	208,097	21,634	11,173	.....	.....	.....	14,446	852	517	360,065
43,338	507,090	33,626	16,770	.....	.....	.....	24,221	7,134	14	9,554
8,623	72,280	14,527	1,946	.....	.....	.....	2,050	2,974	24	11,405
13,633	72,912	22,460	1,739	.....	.....	.....	14,343	13,552	135	49,659
23,227	251,635	49,341	10,753	699	.....	.....	20,429	8,025	5	3,106
8,272	68,412	6,118	4,207	.....	.....	.....	10,312	453	40	17,850
101	858	16,916	31	.....	11,500	5,200	5,744	63,315	5	2,775
7,279	49,574	10,735	1,153	.....	.....	.....	4,407	3,043	554	326,688
7,127	40,697	15,234	1,063	.....	.....	.....	18,330	5,230	7	4,230
60	241	10,331	42	.....	.....	.....	8,435	12,734		
333	2,471	6,333	157	.....	4,300	1,950	2,226	7,140	5	4,715
7,911	72,973	11,720	5,207	.....	.....	.....	10,205	464	43	18,357
11,209	106,913	15,678	2,715	.....	.....	.....	10,169	1,409	2	2,303
228	3,463	8,620	40	.....	.....	.....	1,034	169		
16,163	107,908	21,219	5,242	.....	.....	.....	12,226	4,663	679	353,457
231	45,146	12,164	255	.....	.....	.....	5,331	11,174	14	12,450
6,513	12,307	13,880	691	.....	.....	.....	4,319	2,323	6	3,303
4,567	70,713	10,238	9,225	.....	.....	.....	15,190	269	16	7,333
1,471	15,679	2,369	30	.....	.....	.....	20,405	10,529	5	1,061

TABLE No. 13.

Live Stock and its Productions—1880.

COUNTIES.	LIVE STOCK ON FARMS JUNE 1, 1880.							DAIRY PRODUCTS.			
	Horses.	Mules and Asses.	Working Oxen.	Milch Cows.	Other Cattle.	Sheep.	Swine.	Wool.	Milk Sold.	Butter Made on Farms 1879.	Cheese Made on Farms 1879.
	Number.	Number.	Number.	Number.	Number.	Number.	Number.	Pounds.	Gallons.	Pounds.	Pounds.
Total.	218,538	33,598	54,709	243,061	388,414	497,239	936,451	1,836,673	1,324,469	11,470,926	86,535
Accomac.....	2,143	423	986	2,747	4,926	3,457	20,323	12,102	3,000	74,818	100
Albemarle.....	5,890	636	966	4,834	7,617	10,632	20,303	42,769	24,305	222,186	
Alexandria	473	35	2	490	186	66	504	389	57,504	13,864	100
Alleghany	801	44	24	991	1,650	1,912	3,453	4,855	.....	34,692	
Amelia.....	1,125	358	690	1,494	1,442	1,546	5,173	5,956	1,990	31,327	
Amherst.....	3,160	293	369	3,218	3,119	2,689	8,563	10,453	19,965	177,105	
Appomattox.....	1,283	230	654	1,661	1,604	1,580	4,469	5,311	.....	85,742	57
Augusta.....	8,477	240	71	6,712	14,947	19,510	28,348	57,465	8,531	433,995	2,186
Bath.....	1,118	66	114	1,453	3,384	3,295	3,679	11,957	1,968	52,404	245
Bedford.....	5,677	794	539	5,700	7,644	8,322	17,508	23,095	4,021	393,763	181
Bland.....	1,414	18	113	1,462	3,991	6,044	5,377	23,513	.....	75,676	3,577
Botetourt.....	2,846	116	65	2,707	4,515	3,044	8,825	10,598	1,935	133,209	40
Brunswick.....	1,510	653	1,544	2,687	4,685	3,631	12,633	9,267	.....	76,310	1,480
Buchanan.....	886	209	123	2,069	3,717	6,613	9,719	14,688	.....	109,690	116
Buckingham.....	1,894	363	1,573	2,369	2,686	3,677	9,538	7,990	.....	106,397	
Campbell.....	2,902	675	595	3,057	2,577	3,632	8,317	8,367	32,535	130,993	16

Caroline.....	2,298	681	1,215	2,543	2,117	2,831	8,062	11,235	70	87,141	9,279
Carroll.....	1,763	100	1,032	3,420	5,019	4,678	12,212	28,691	.....	204,481	
Charles City.....	467	452	124	1,026	637	1,901	4,480	4,844	50	27,187	900
Charlotte.....	1,513	710	875	2,190	2,898	8,104	8,496	9,394	10	93,335	
Chesterfield.....	1,431	768	353	2,450	1,837	8,250	9,178	11,025	39,660	110,924	60
Clarke.....	2,594	53	24	2,002	4,857	14,437	8,975	67,077	24,610	107,593	250
Craig.....	1,167	55	30	1,232	3,104	8,013	4,289	10,796	.....	59,669	2,065
Culpeper.....	8,197	383	408	3,413	6,703	18,480	9,238	70,797	.....	133,775	50
Cumberland.....	1,123	366	793	1,138	1,413	1,620	8,536	5,078	.....	43,438	100
Dinwiddie.....	1,465	443	636	2,170	2,133	2,003	7,781	5,609	18,695	71,780	
Elizabeth City.....	472	111	231	698	540	605	2,819	2,439	40,635	5,351	
Essex.....	1,344	324	1,561	1,641	1,751	2,510	6,539	9,954	.....	45,613	
Fairfax.....	3,677	144	193	5,395	3,443	4,005	6,476	17,302	517,337	355,233	
Fauquier.....	6,829	152	821	5,646	17,931	23,849	16,543	96,493	135	291,422	
Floyd.....	2,477	102	621	3,555	5,573	8,310	10,610	25,730	.....	310,005	4,169
Franklin.....	1,390	353	767	1,613	1,783	2,251	6,575	8,376	100	74,632	
Frederick.....	3,798	639	833	5,071	5,461	8,026	15,437	18,054	60	324,579	130
Giles.....	4,394	132	811	4,045	5,779	13,898	10,865	63,961	4,764	235,417	1,040
Gloucester.....	1,874	67	75	1,796	3,767	5,315	7,087	21,277	800	64,231	3,815
Goochland.....	1,179	133	1,066	1,591	1,621	2,416	8,646	10,421	130	50,761	
Grayson.....	1,146	443	880	1,746	976	1,466	4,880	5,480	.....	82,181	
Greene.....	3,402	167	657	2,875	5,410	13,194	13,777	45,057	80	159,023	5,791
Greensville.....	1,325	75	65	1,097	1,400	1,703	5,443	6,565	.....	59,698	
Halifax.....	766	446	660	1,064	1,964	987	7,519	2,580	10	25,340	430
Hanover.....	3,224	1,300	1,690	4,027	4,036	3,618	13,028	9,013	2,130	134,005	335
	2,293	990	445	2,961	1,853	2,560	8,401	9,313	1,475	164,765	

TABLE No. 13—CONTINUED.

COUNTIES.	LIVE STOCK ON FARMS JUNE 1, 1880.							DAIRY PRODUCTS.			
	Horses.	Mules and Asses.	Working Oxen.	Milch Cows.	Other Cattle.	Sheep.	Swine.	Wool.	Milk Sold.	Butter Made on Farms 1879.	Cheese Made on Farms 1879.
	Number.	Number.	Number.	Number.	Number.	Number.	Number.	Pounds.	Gallons.	Pounds.	Pounds.
Henrico	1,790	815	60	2,181	814	607	4,889	2,064	180,491	94,561	1,400
Henry	1,362	916	265	2,988	2,512	2,506	8,880	5,413	479	137,409	55
Highland	1,741	42	133	2,315	5,605	8,573	3,491	31,614	180	81,965	2,587
Isle of Wight.....	1,528	320	642	1,401	2,248	1,280	16,201	8,301	187	21,923	
James City.....	451	133	388	765	1,206	723	3,416	2,773	88	22,205	250
King and Queen.....	1,864	151	1,932	2,014	2,174	2,705	8,962	10,639	.....	46,635	
King George.....	1,283	285	773	1,144	1,941	2,284	4,087	9,889	47	39,260	
King William.....	1,213	402	473	1,276	1,127	1,889	6,575	8,671	.....	33,409	
Lancaster.....	689	91	815	866	963	779	3,470	3,891	15	19,105	
Lee.....	3,555	533	279	3,355	6,854	10,139	22,794	27,605	.....	200,089	4,015
Loudoun	7,932	61	352	7,835	16,267	24,398	13,586	170,495	5,750	490,380	2,096
Louisa	2,167	630	1,713	3,357	3,860	4,001	11,924	15,196	851	119,174	40
Lunenburg.	1,153	337	964	1,922	3,106	3,472	7,799	10,116	130	69,683	145
Madison.....	2,429	234	235	2,554	4,490	4,399	10,492	17,461	.....	110,244	
Mathews	693	56	641	1,184	986	979	4,897	8,254	630	46,604	
Mecklenburg	2,466	954	1,909	3,794	5,840	4,996	16,220	13,209	124	113,882	232
Middlesex.....	738	59	671	1,030	1,039	1,536	3,083	6,982	.....	28,473	
Montgomery	2,770	124	943	2,967	5,093	5,264	11,240	18,307	3,107	137,015	2,715

Namemond.....	1,689	463	431	1,972	2,800	889	16,737	2,584	2,592	8,444	70
Nelson.....	2,667	373	518	2,730	2,735	2,649	10,017	9,690	835	130,724	
New Kent.....	533	293	293	914	912	685	2,903	2,413	.....	35,051	
Norfolk.....	2,016	768	175	1,129	717	698	10,344	2,680	72,649	14,322	156
Northampton.....	1,634	183	263	1,166	1,864	1,685	8,666	5,934	89	22,051	
Northumberland.....	1,170	126	1,623	1,617	1,191	2,341	6,547	9,978	1,492	29,469	
Nottoway.....	1,006	303	1,053	1,039	1,793	1,689	6,730	5,161	145	56,313	
Orange.....	2,499	413	339	2,402	4,078	6,570	9,230	27,455	100	76,623	296
Page.....	2,605	93	8	1,971	3,436	4,230	9,037	18,210	50	89,239	535
Patrick.....	1,368	504	579	2,393	3,667	4,917	12,037	10,451	70	144,307	842
Pittsylvania.....	4,147	1,966	591	5,057	5,998	4,870	20,551	11,794	14,568	276,050	10
Powhatan.....	1,150	370	607	1,304	1,235	2,626	5,120	10,235	.....	49,443	
Prince Edward.....	1,057	449	840	1,546	1,463	1,424	5,397	4,991	2,575	56,350	
Prince George.....	773	566	243	727	390	1,531	4,740	5,109	2,290	20,151	
Princess Anne.....	1,466	363	59	794	2,999	3,409	13,613	11,779	.....	13,613	
Prince William.....	2,422	86	353	2,692	4,425	9,120	8,089	37,637	40	124,999	130
Pulaski.....	1,586	77	244	1,688	5,373	5,860	7,907	22,387	60	110,592	2,118
Rappahannock.....	2,560	144	136	2,153	9,098	8,137	6,957	30,560	65	98,238	90
Richmond.....	793	63	1,536	1,223	1,145	1,235	5,967	5,384	.....	34,775	
Roanoke.....	2,254	227	118	2,062	4,446	2,035	7,729	7,186	1,750	101,299	575
Rockbridge.....	4,632	152	100	4,265	8,213	6,422	11,618	25,232	17,822	286,212	640
Rockingham.....	8,013	115	27	6,339	13,911	8,373	24,376	36,001	1,263	428,035	469
Russell.....	3,084	765	156	3,216	12,775	11,653	12,991	37,399	.....	178,812	6,859
Scott.....	4,188	487	233	4,495	6,062	13,977	23,948	30,156	.....	201,039	2,844
Shenandoah.....	4,680	75	8	4,437	8,313	7,047	15,069	30,005	1,839	304,033	332
Smyth.....	2,614	122	269	2,448	6,641	8,246	9,431	34,072	265	121,235	5,640

TABLE No. 13—CONTINUED.

COUNTIES.	LIVE STOCK ON FARMS JUNE 1, 1880.								DAIRY PRODUCTS.			
	Horses.	Mules and Asses.	Working Oxen.	Milch Cows.	Other Cattle.	Sheep.	Swine.	Wool.	Milk Sold.	Butter Made on Farms 1879.	Cheese Made on Farms 1879.	
											Gallons.	Pounds.
Southampton	1,754	865	981	1,940	2,838	9,845	23,573	5,836	59,598	16,317		
Spotsylvania.....	1,691	334	798	2,442	2,188	3,235	8,995	12,007	13,125	93,708		
Stafford.....	1,586	198	409	1,798	2,191	2,804	5,404	11,174	360	67,694	200	
Surry	973	208	326	814	600	733	5,630	1,363	60	9,620		
Sussex.....	1,000	400	468	1,033	1,218	1,832	7,795	3,196	.....	14,668		
Tazewell	2,982	200	283	3,512	12,183	12,205	11,934	42,385	51,475	119,900	2,867	
Warren.....	2,049	9	3	1,546	3,677	6,010	4,718	24,092	1,830	142,189	75	
Warwick	298	69	369	573	446	341	2,437	1,183				
Washington	4,375	379	204	4,440	6,718	12,055	14,866	44,652	2,875	233,376	9,820	
Westmoreland.....	1,044	101	1,739	1,542	1,733	2,152	6,144	8,929	456	44,844		
Wise.....	1,353	111	191	2,156	3,005	7,134	12,926	12,679	.....		
Wythe.....	2,647	161	337	2,747	7,374	9,240	11,648	41,096	3,661	135,980	262	
York	676	84	898	1,000	1,263	340	6,237	1,201	65	151,324	1,560	

A BRIEF SUMMARY
OF THE
History of Public Free Schools in Virginia
AND THE MEANS OF ACQUIRING
A FREE HIGHER EDUCATION,

*Prepared by R. B. Farr, Superintendent of Public Instruction, at the request of
Col. Randolph Harrison, Commissioner of Agriculture of Virginia,
for his Hand-Book of Virginia.*

The present public free school system of Virginia is a part of the State constitution which was framed by the convention of 1867, and ratified by the people July 8th, 1869. The principal and essential features of the system are clearly and emphatically defined by sections 1 to 12 inclusive of article 8 of the constitution. These sections are so closely connected and give such a comprehensive view of the details of the system that they are quoted in full for information. Being the supreme law of the State, they are the superior of any statute that has been or may be passed in conflict with their provisions.

ARTICLE VIII—EDUCATION.

SEC. 1. The general assembly shall elect, in joint ballot, within thirty days after its organization, under this constitution, and every fourth year thereafter, a superintendent of public instruction. He shall have the general supervision of the public free school interest of the State, and shall report to the general assembly for its consideration, within thirty days after his election, a plan for a uniform system of public free schools.

SEC. 2. There shall be a board of education, composed of the governor, superintendent of public instruction, and attorney-general, which shall appoint and have power to remove, for cause and upon notice to the incumbents, subject to confirmation by the senate, all county superintendents of public free schools. This board shall have, regulated by law, the management and investment of all schools funds, and such supervision of schools of higher grades as the law shall provide.

SEC. 3. The general assembly shall provide by law, at its first session under this constitution, a uniform system of public free schools, and for its gradual, equal, and full introduction into all the counties of the State, by the year 1876, or as much earlier as practicable.

SEC. 4. The general assembly shall have power, after a full introduction of the public free school system, to make such laws as shall not permit parents and guardians to allow their children to grow up in ignorance and vagrancy.

SEC. 5. The general assembly shall establish, as soon as practicable, normal schools, and may establish agricultural schools and such grades of schools as shall be for the public good.

SEC. 6. The board of education shall provide for uniformity of text-books and the furnishing of school-houses with such apparatus and library as may be necessary, under such regulations as may be provided by law.

SEC. 7. The general assembly shall set apart, as a permanent and perpetual literary fund, the present literary funds of the State, the proceeds of all public lands donated by congress for public school purposes, of all escheated property, of all waste and unappropriated lands, of all property accruing to the State by forfeiture, and all fines collected for offences committed against the State, and such other sums as the general assembly may appropriate.

SEC. 8. The general assembly shall apply the annual interest on the literary fund, the capitation tax provided for by this constitution for public free school purposes, and an annual tax upon the property of the State of not less than one mill nor more than five mills on the dollar, for the equal benefit of all the people of the State, the number of children between the ages of five and twenty-one years, in each public free school district, being the basis of such division. Provision shall be made to supply children attending the public free schools with necessary text-books in cases where the parent or guardian is unable, by reason of poverty, to furnish them. Each county and public free school district may raise additional sums by a tax on property for the support of the public free schools. All unexpended sums of any one year in any public free school district shall go into the general school fund for redivision the next year: provided, that any tax authorized by this section to be raised by counties or school districts shall not exceed five mills on a dollar in any one year, and shall not be subject to a re-division, as hereinbefore provided in this section.

SEC. 9. The general assembly shall have power to foster all higher grades of schools under its supervision, and to provide for such purpose a permanent educational fund.

SEC. 10. All grants and donations received by the general assembly for educational purposes shall be applied according to the terms prescribed by the donors.

SEC. 11. Each city and county shall be held accountable for the destruction of school property that may take place within its limits by incendiaries or open violence.

SEC. 12. The general assembly shall fix the salaries and prescribe the duties of all school officers, and shall make all needful laws and regulations to carry into effect the public free school system provided for by this article.

At the time the constitution was ratified, July 6, 1869, members for a general assembly were elected, which met the 5th of the following October, and among its first acts was the passage of a law providing for the adoption of a uniform system of public free schools for the counties. This law was approved July 11th, 1870, (the law to provide for a system of public free schools in the cities of the commonwealth was not passed until the following session, and was approved March 31st, 1871.)

These laws were both very full and explicit, and provided that the schools should be free to all the children of the commonwealth between the ages of five and twenty-one, and re-enacted, with the requisite machinery to put them properly in operation, the provisions of the constitution. It provided that the district school trustees required by section 3 of article 7 of the constitution should be elected and controlled under said section by the board of education. This was amended January 11th, 1877, so as to create a "trustee electoral board," to be composed of the county superintendent of schools, county judge, and attorney for the commonwealth, and this was superseded in February, 1884, by the law

which creates in each county in the State a board known as the "County Board of School Commissioners," to consist of "three citizens of each county in the commonwealth," to be elected by the general assembly every four years, and "to go into office the first day of April succeeding their election, after having first taken and subscribed the usual oath of office." This board is clothed with all the powers and duties of its predecessor.

Whilst there is nothing in the constitution of the State which prohibits white and colored children from being taught in the same schools, the original law, which gave force to the constitution, provides that "white and colored children shall not be taught in the same school, but in separate schools, under the same general regulations as to management, usefulness, and efficiency." This provision was emphasised by the law being re-enacted the 27th of June, 1877, and again the 26th of January, 1882.

In brief, the public free school system of Virginia is administered by the following boards and officers :

The State board of education, consisting of the governor, who is *ex-officio* chairman, the attorney-general, and superintendent of public instruction. At this time it is composed of Hon. W. E. Cameron, governor ; Hon. F. S. Blair, attorney-general ; and R. R. Farr, superintendent of public instruction.

The superintendent of public instruction is elected by the joint vote of the general assembly, and holds his office for four years from the 15th day of March following his election. He is "the chief executive of the public free school system," and is charged with the duty of seeing that all laws and regulations are faithfully executed, and to determine the true intent and meaning of same. His duties are numerous and responsible. He is provided with an office and two clerks, and is allowed a salary of two thousand dollars per annum, and is required to make an annual report to the board of education of "his official proceedings for the year ending the 31st day of July preceding."

Every county and city in the State—and some of the towns—has a superintendent of schools, who is appointed by the board of education for four years from the first of July following the appointment, "subject to confirmation by the senate." Their salaries are fixed according to the population of their respective counties and cities, and paid in quarterly instalments out of the State school fund. They receive thirty dollars for each thousand of population under their respective jurisdictions for the first ten thousand, rejecting fractions less than five hundred, and twenty dollars for each one thousand in excess of ten thousand up to and including thirty thousand, rejecting fractions of five hundred, and so on.

Superintendents of schools have a general supervision over all the schools in their respective counties, cities, and towns, and are required to do all in their power to promote the efficiency of the same. They examine and license all teachers, apportion the State and county school money among the several school districts, and exercise a general supervision over the finance of the schools. All teachers of the county or city report to the superintendent monthly and at the end of their term ; and it is his receipt for monthly reports that entitles them to the warrants of the board of trustees, upon which they draw their salaries. Every superintendent is required to report to the superintendent of public instruction monthly and annually, and to observe such instructions and regulations as he may from time to time prescribe.

The following is a correct list of the county and city superintendents, and the amount of salary each receives from the State. Cities and towns can supplement the salary of their superintendent, but counties cannot :

COUNTY AND CITY SUPERINTENDENTS OF SCHOOLS.

Number of School Districts in Each County and City and Number of School Trustees in Each.

COUNTY AND CITY.	SUPERINTENDENT.	POST-OFFICE.	TERM BEGINS.	Term Ends. July 1.	Annual Salary.	No. of School Districts	Number of Trustees
Acomac.....	James C. Weaver.....	Onancock.....	Jan. 27, '82.....	1886	\$ 580	5	15
Albemarle.....	L. A. Michie.....	Free Union.....	Feb. 1, '82.....	1886	730	6	18
Alexandria city.....	W. F. Carne.....	Alexandria.....	July 1, '82.....	1886	380	4	12
Alexandria county.....	A. B. Grunwell.....	Georgetown, D. C.....	March 1, '84.....	1888	200	3	9
Alleghany.....	A. A. McDonald.....	Covington.....	Feb. 18, '82.....	1886	200	3	9
Amelia.....	H. T. Tucker.....	Paineville.....	Jan. 25, '82.....	1886	300	3	9
Amherst ..	O. G. Bailey.....	Big Island.....	Feb. 15, '84.....	1888	480	4	12
Appomattox.....	Rev. J. B. Bristow.....	Hixburg.....	Jan. 21, '82.....	1886	300	3	9
Augusta.....	H. S. Roller.....	Mt. Sidney.....	July 1, '83.....	1887	660	6	18
Bath.....	Rev. S. S. Ryder.....	Warm Springs.....	July 15, '84.....	1889	200	4	12
Bedford.....	Captain James G. Board.....	Liberly.....	July 1, '82.....	1886	710	8	24
Bland.....	James T. Taylor.....	Mechanicksburg.....	Feb. 1, '82.....	1886	200	4	12
Botetourt.....	M. B. Obenshain.....	Obenshain.....	Feb. 18, '82.....	1886	400	4	12
Brunswick.....	W. F. Jones.....	Lawrenceville.....	July 1, '83.....	1887	440	5	15

Buchanan.....	Thomas W. Ratliff.....	Grundy.....	July 1, '83.....	1887	200	3	9
Buckingham.....	A. J. Eppes.....	Buckingham C. H.....	July 1, '82.....	1886	420	6	18
Campbell.....	E. A. Hamlet.....	Morris's Church.....	".....	1886	500	5	15
Caroline.....	B. B. Wright.....	Penola.....	".....	1886	440	4	12
Carroll.....	Thomas J. Jennings.....	Hillsville.....	Jan. 26, '82.....	1886	230	6	18
Charles City county....	J. P. Stagg.....	Wilcox Wharf.....	Feb. 1, '82.....	1886	200	3	9
Charlotte.....	Dr. John C. Paris.....	Randolph.....	Jan. 31, '82.....	1886	440	4	12
Chesterfield.....	E. S. Robinson.....	Petersburg.....	Jan. 23, '82.....	1886	460	6	18
Clarke.....	L. N. Hoge.....	Lake View.....	Temporary.....	.....	240	4	12
Craig.....	P. O. Reynolds.....	Loony.....	Mar. 11, '82.....	1886	200	3	9
Culpeper.....	John W. Colvin.....	Culpeper C. H.....	Feb. 18, '82.....	1886	360	5	15
Cumberland.....	Charles A. Holman.....	McRae's Store.....	Feb. 23, '82.....	1886	320	3	9
Danville City.....	H. C. Slaughter.....	Danville.....	April 5, '84.....	1888	680	6	18
Dickenson.....	J. M. Thornbury.....	Clintwood.....	Jan. 25, '82.....	1886	200	3	9
Dinwiddie.....	Charles M. Harris.....	Hebron.....	Feb. 1, '82.....	1886	380	4	12
Elizabeth City county..	I. L. Jones.....	Hampton.....	Nov. 30, '83.....	1888	320	3	9
Essex.....	B. G. Rennolds.....	Lloyds.....	July 1, '83.....	1887	320	3	9
Fairfax.....	E. F. Crocker.....	Falls Church.....	".....	1887	420	7	21
Fauquier.....	W. H. Strother.....	Markham.....	July 1, '82.....	1886	560	6	18

COUNTY AND CITY SUPERINTENDENTS OF SCHOOLS.—CONTINUED.

COUNTY OR CITY.	SUPERINTENDENT.	POST-OFFICE.	TERM BEGINS.	Term Ends. July 1.	Annual Salary.	No. of School Districts.	Number of Trustees.
Floyd	Dr. John W. Simmons.....	Floyd C. H.....	Jan. 31, '82	1886	\$ 360	6	18
Fluvanna.....	Jno. B. Haden.....	Antioch.....	July 1, '83	1887	320	4	12
Franklin.....	Dr. Bruce A. James	Rocky Mount.....	Feb. 1, '82.....	1886	600	10	30
Frederick.....	George W. Ward	Winchester	March 12, '84....	1888	460	6	18
Fredericksburg.....	General Daniel Ruggles.....	Fredericksburg.....	July 1, '83.....	1887	200	2	6
Giles	G. T. Porterfield.....	Newport	July 1, '82	1886	270	4	12
Gloucester.....	Robert H. Franklin.....	Gloucester C. H.....	May 1, '82.....	1886	340	3	9
Goochland.....	E. S. Reeve.....	Olville.....	Mar. 21, '82.....	1886	300	3	9
Grayson.....	William S. Hale.....	Elk Creek.....	Feb. 1, '81.....	1886	360	3	9
Greene.....	J. N. McMullen.....	Stanardsville	Feb. 2, '82.....	1886	200	3	9
Greensville	John S. Spencer.....	Pleasant Shade.....	July 1, '83.....	1887	240	3	9
Halifax.....	T. E. Barksdale.....	Whitlock.....	March 11, '84....	1888	740	9	27
Hanover.....	J. L. Valentine.....	Ashland	Feb. 16, '82	1886	480	3	9
Henrico.....	Daniel E. Gardner.....	Richmond	Jan. 28, '82.....	1886	480	4	12
Henry.....	Dr. J. M. Smith.....	Martinsville.....	Mar. 4, '82.....	1886	430	5	15

Highland	O. P. Crew	Crabbottom	Dec. 2, '84.....	1889	200	3	9
Isle of Wight.....	W. S. Holland.....	Windsor	Jan. 23, '82	1886	320	4	12
James City county.....	C. W. Taylor	Toano	Jan. 26, '82	1886	200	3	9
King & Queen	J. G. Cannon	Miller's Tavern, Es. co ..	Feb. 1, '82	1886	320	3	9
King George.....	W. McDaniel.....	Rollin's Fork.....	Feb. 21, '82.....	1886	200	3	9
King William	Colonel J. C. Johnson	Beulahville	July 1, '82.....	1886	270	4	12
Lancaster.....	Samuel P. Gresham.....	Lancaster C. H.....	Feb. 18, '82.....	1886	200	3	9
Lee	James H. Graham.....	Rocky Station	Feb. 1, '82.....	1886	400	5	15
Loudoun	Colonel W. Giddings.....	Taylorstown	"	1886	580	6	18
Louisa.....	W. J. Walton	Jackson	Nov. 1, '83.....	1888	480	4	12
Lunenburg	O. L. Hardy.....	Nutbush	Feb. 1, '82.....	1886	340	6	18
Lynchburg city	P. C. Grigsby	Lynchburg	July 1, '83.....	1887	420	3	9
Madison	H. N. Fry.....	Oak Park.....	Feb. 23, '82	1886	320	3	9
Manches'er city	E. B. Howle.....	Manchester.....	June 21, '82.....	1886	200	4	12
Mathews.....	Rev. R. B. Collier	Mathews C. H.....	Jan. 25, '82	1886	240	3	9
Mecklenburg.....	H. E. Coleman.....	Palmer's Springs.....	July 1, '82.....	1886	600	8	24
Middlesex	R. T. Bland	Saluda.....	March 7, '82.....	1886	200	3	9
Montgomery	W. A. Havener.....	Christiansburg	March 12, '84....	1888	440	4	12
Nansemond.....	V. S. Kilby	Suffolk.....	March 21, '82.....	1886	420	5	15

COUNTY AND CITY SUPERINTENDENTS.—CONTINUED.

COUNTY OR CITY.	SUPERINTENDENT.	POST-OFFICES.	TERM BEGINS.	Term Ends. July 1.	Annual Salary.	No. of School Districts	Number of Trustees
Nelson	Judge Geo. S. Stevens	Lovington	May 6, '82	1886	\$440	3	9
New Kent	Dr. J. D. Turner	Lanexa	Oct. 11, '83	1888	200	4	12
Norfolk county	Jesse E. Baker	Bowers's Hill	July 1, '83	1886	600	6	18
Norfolk city	Major R. G. Banks	Norfolk	March 21, '84	1888	540	4	12
Northampton	James B. Dalby	Capeville	July 1, '83	1886	270	3	9
Northumberland	William Broun	Wicomico Church	" '81	1885	240	4	12
Nottoway	J. E. Perkinson	Jennings's Ordinary	April 22, '82	1886	320	3	9
Orange	F. L. Marshall	Orange C. H.	July 1, '82	1886	360	5	15
Page	E. T. Broyles	Luray	" '83	1887	300	4	12
Patrick	Major J. A. Taylor	Patrick C. H.	March 26, '82	1886	360	3	9
Petersburg city	Major E. B. Branch	Petersburg	July 1, '82	1886	540	4	12
Pittsylvania	Dr. J. W. Wilson	Chatham	March 12, '84	1888	580	5	15
Portsmouth city	G. F. Edwards	Portsmouth	July 1, '83	1886	320	4	12
Powhatan	Dr. W. H. Henning	Jefferson	Jan. 31, '82	1886	240	3	9
Prince Edward	T. W. Crawley	Prospect Depot	July 1, '82	1886	400	5	15

Prince George	H. C. Britton	Garysville	Feb. 17, '83.....	1886	\$270	5	15
Princess Anne	O. B. Mears	Kempville	Jan. 22, '85.....	1884	270	3	9
Prince William	Samuel Martyn	Ocoquan	July 1, '83.....	1887	270	7	21
Pulaski	M. J. Alexander	Newbern	Feb. 1, '83.....	1886	270	3	9
Rappahannock	A. H. Buckner	Sperryville	Feb. 21, '83.....	1886	270	5	15
Richmond county	Rev. Geo. H. Northam	Emmerton	July 1, '83.....	1886	210	4	12
Richmond city	E. M. Garnett	Richmond	March 3, '83.....	1886	1040	3	9
Roanoke	Marshall Franz	Salem	July 1, '83.....	1887	360	4	12
Rockbridge	J. L. Hamilton	Lexington	Feb. 16, '82.....	1886	500	7	21
Rockingham	A. P. Funkhouser	Harrisonburg	July 1, '83.....	1887	700	6	18
Russell	Captain E. D. Miller	Honaker	March 15, '82.....	1886	380	6	18
Scott	Dr. J. B. Wolfe	Clinch	July 1, '82.....	1886	440	7	21
Shenandoah	W. W. Logan	Woodstock	"	1886	460	7	21
Smythe	Major A. G. Pendleton	Marion	Nov. 11, '84.....	1889	340	4	12
Southampton	J. J. Deyer	Handsoms	March 31, '84	1888	460	6	18
Spotsylvania	J. M. Holladay	Holladay	March 8, '84.....	1888	300	4	12
Stafford	Strother Harding	Garrisonville	Feb. 1, '82.....	1886	210	4	12
Staunton city	W. A. Bowles	Staunton	April 20, '82.....	1886	210	2	6
Surry	William Dillard	Claremont	Nov. 26, '84.....	1889	210	3	9

C O U N T Y A N D C I T Y S U P E R I N T E N D E N T S . — C O N T I N U E D .

C O U N T Y O R C I T Y .	S U P E R I N T E N D E N T S .	P O S T - O F F I C E S .	T E R M B E G I N S .	T e r m E n d s . July 1 .	A n n u a l S a l a r y .	N o . o f S c h o o l D i s t r i c t s	N u m b e r o f T r u s t e e s
Sussex.....	W. N. Blow.....	Littleton.....	July, 1 '83.....	1887	\$300	6	18
Tazewell.....	James H. Gillisple.....	Shrader's.....	Feb. 1, '82.....	1886	360	3	9
Warren.....	J. T. Silman.....	Front Royal.....	March 18, '82....	1886	210	5	15
Warwick.....	C. F. Groome.....	Morrison's.....	Dec. 7, '83.....	1888	200	3	9
Washington.....	Colonel R. P. Carson.....	Arlington.....	Jan. 28, '82.....	1886	600	8	24
Westmoreland.....	Rev. H. H. Fones.....	Montross.....	July 1, '82.....	1886	270	3	9
Wise.....	M. M. Wells.....	Big Stone Gap.....	Feb. 23, '82.....	1886	200	4	12
Wythe.....	Major Wm. G. Repass.....	Wytheville.....	Feb. 1, '82.....	1886	380	6	18
York.....	L. U. Evans.....	Spears.....	March 3, '82.....	1886	210	4	12
Williamsburg.....	W. C. Constable.....	Williamsburg.....	Dec. 18, '84.....	1889	200	1	3

T o t a l N u m b e r o f D i s t r i c t s , 494.

T o t a l N u m b e r o f T r u s t e e s , 1,452.

The law provides that each school district shall correspond in boundaries with the magisterial districts (except when modified in the creation of sub-districts), "that each district shall be a body corporate; that it may sue and be sued, contract and be contracted with, take, hold and convey property."

There are 450 districts in the counties of the State, and ten city school boards, composed of all the trustees of the respective cities or towns, who are appointed by the councils of the same. Each city board constitutes a single corporation, with the same officers, powers and duties of ordinary boards of district school trustees.

TRUSTEES.

There are three trustees for each school district, one of them being appointed annually by the board of school commissioners. There are 1,350 trustees for the districts in the counties, and 102 for the wards in the cities, giving a total of 1,452 for the State. With the exception of the member who acts as clerk of the district board—who may be allowed for his services out of the district fund not exceeding two dollars for every day of service rendered within prescribed limits—the members serve without compensation.

TEACHERS.

All persons who desire to teach in the public schools are required to be examined by and obtain from the superintendent of the county or city, where they intend to teach, a written certificate of qualification. They are elected by the boards of trustees of the respective districts, and are required by law to enter into a written contract to faithfully discharge their duties.

During the school year ending the 31st day of July, 1884, there were employed in the State 2,862 white male teachers, 2,421 white female teachers; 885 colored male teachers, and 703 colored female teachers—making a total of 6,371 employed. The average salary, per month, paid teachers for year ending July 31st, 1884, was: White males, \$30.25; females, \$26.18. Colored males, \$25.77; colored females, \$23.52.

BRANCHES TAUGHT.

In every public free school shall be taught orthography, reading, writing arithmetic, grammar, and geography, and by common consent history, and no other branches unless the county school board has determined to introduce the higher branches; then the boards of trustees of the districts in such counties, with the consent of said board in each case, can introduce the higher branches in their respective schools, *provided* that the introduction of said branches does not conflict or interfere with efficient instruction in the elementary English branches. District boards are required to furnish text-books free to children whose parents or guardian are unable to provide them.

TEXT-BOOKS.

A list of text-books is prescribed by the board of education, from which the county boards adopt such books as they may think proper.

The contracts are made with the publishing houses for four years, and no book not found on the state list can be used in any of the public free schools, nor can any book, when adopted, be changed for any other on the same subject until the expiration of the four years.

COUNTY SCHOOL BOARDS.

In each county there is a county school board, composed of the county superintendent, who is *ex-officio* its chairman, and the district trustees of all the districts in the county. This board recommends to the board of supervisors the amount of money necessary for the county and district school fund for the ensuing year. It is also charged with the duty of seeing that the treasurer's accounts and the accounts of the district clerks are correct, and of instituting suits against all defaulters.

SCHOOL TAXES

consists of three classes. First, the amount received from the State under the requirements of the constitution, and this now is also divided into two classes—viz: the gross amount received annually, which, under the requirements of the act approved March 6th, 1883, is left in the hands of the respective treasurers, and disbursed on the order of the superintendent of schools. Second, all cash received on account of balances due on the annual revenue, on the final settlement of the account, the quarterly payment required by the act referred to, to be paid on the arrearage account and the interest on the literary fund. These amounts are all paid into the hands of the second auditor, to the credit of the State board of education, and are disbursed in accordance with the requirements of law for the support of public free schools upon the order of said board.

The county school tax is levied by the boards of supervisors, upon the recommendation of the county school board. It is a general tax upon the people of the county, and when collected is apportioned to the respective districts upon the basis of school population, as state money is apportioned, and can be used only for the pay of teachers.

The district tax is levied upon the property of the respective districts, and is used exclusively in the district where it is collected for building, repairing and furnishing school-houses, providing school furniture and apparatus, supplying indigent children with text-books, and to pay contingent expenses.

THE FIRST PUBLIC FREE SCHOOLS

under the present system were opened about the middle of November, 1870. The most of the school-houses and appliances were provided by private means, the machinery of levying and collecting the district tax, as it now exists, not having been authorized.

The following table gives a summary of each year's work, school population, teachers, enrollment, and average attendance, by color, as well as amount of State, county and district money expended each year. From this table, it will be seen that the least amount of money expended by the State for public education was in 1879, and the greatest amount in 1884; that the smallest amount raised by the counties for county school purposes was in 1870, and the largest in 1884; that raised by district tax smallest in 1870 and largest in 1873. That the total amount expended by the State, county and district, respectively, on account of public free schools for the fourteen years that the present system has been in existence amounts to the following sums: State, \$6,359,795; county, \$2,942,795; district, \$3,951,341—a grand total of \$13,253,931.

TABLE NO. 1.

Shewing the Progress of the Public Free School System of Virginia from its Inauguration Up to the 31st day of July, 1884.

YEARS.	SCHOOL POPULATION.				TEACHERS.				ENROLMENT.				AVERAGE DAILY ATTENDANCE.			Amount of State Money.	Amount Expended by County.	Amount Expended by Districts.	TOTAL.
	White.		Colored.		White.		Colored.		Total.	White.	Colored.	Total.	White.	Colored.	Total.				
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.					Male.	Female.	Male.
1871	247,002	164,019	1,616	935	163	335	89,734	38,354	128,088	52,370	23,453	75,793	\$345,515	\$155,749	\$174,591	\$ 675,300			
1872	247,002	164,019	2,346	1,147	136	324	119,641	46,736	166,377	69,116	26,373	95,489	432,663	213,864	249,104	891,570			
1873	247,002	164,019	2,173	1,190	127	349	112,819	47,169	159,988	64,443	26,321	90,664	390,330	153,764	351,798	896,062			
1874	247,002	164,019	2,210	1,263	171	319	121,739	52,066	173,875	69,929	23,938	93,837	430,729	263,129	304,711	933,569			
1875	290,149	202,640	2,360	1,363	183	351	123,545	54,941	184,486	74,056	29,871	103,927	438,666	189,756	334,321	912,643			
1876	280,149	202,640	2,405	1,439	213	413	137,673	62,173	199,856	80,631	34,722	115,343	432,739	193,931	322,473	974,188			
1877	280,149	202,640	2,534	1,545	223	443	139,931	65,043	204,974	82,039	35,814	117,843	432,713	193,236	317,336	924,275			
1878	280,149	202,640	2,421	1,509	241	432	140,473	61,772	202,244	82,164	34,300	116,464	194,896	193,861	303,943	692,704			
1879	280,149	202,640	1,131	963	136	279	73,306	35,763	108,074	44,540	21,321	65,771	130,334	323,365	323,725	602,524			
1880	314,327	249,989	2,473	1,610	24	531	162,136	63,600	225,736	89,640	33,764	123,404	530,337	310,663	279,371	1,070,396			
1881	314,327	240,980	2,610	1,535	329	593	162,037	76,359	238,396	92,922	41,565	134,487	537,372	307,031	316,931	1,112,004			
1882	314,327	240,980	2,513	2,020	396	663	172,034	85,323	257,353	97,997	46,907	144,904	607,573	323,713	336,496	1,090,730			
1883	314,327	240,980	2,303	2,309	743	517	177,413	90,943	268,360	102,155	43,860	151,013	712,029	347,339	361,339	1,220,807			
1884	314,327	240,980	2,302	2,421	708	835	184,720	103,316	288,036	106,907	36,463	163,369	747,592	363,936	390,033	1,301,541			

TABLE No. 2.

Showing number of Schools, Enrolment of Scholars, and, Average Daily Attendance for Year ending July 31st, 1884.

	SCHOOLS.			ENROLMENT.			AVERAGE DAILY ATTENDANCE.		
	White.	Colored.	TOTAL.	White.	Colored.	TOTAL.	White.	Colored.	TOTAL.
	1	2	3	4	5	6	7	8	9
Accomac	61	17	78	3,402	1,571	4,973	1,765	650	2,414
Albemarle.....	75	42	117	2,746	2,180	4,926	1,598	1,318	2,916
Alexandria City.	17	14	31	883	884	1,717	641	578	1,219
Alexandria Co..	4	5	9	244	437	681	175	239	464
Alleghany.....	32	6	38	1,115	300	1,315	640	120	760
Amelia.....	15	15	30	520	882	1,402	309	424	733
Amherst.....	50	24	74	2,246	1,118	3,364	1,311	695	2,006
Appomattox....	27	15	42	1,050	896	1,946	695	453	1,047
Augusta.....	144	40	184	5,196	1,511	6,709	3,121	1,004	4,125
Bath.....	24	4	28	733	126	859	476	89	1,565
Bedford.....	96	38	134	4,333	2,190	6,523	2,333	1,776	3,559
Bland.....	33	1	34	1,334	25	1,359	302	17	319
Botetourt.....	66	22	88	1,663	735	2,398	1,391	541	1,932
Brunswick.....	36	26	62	1,254	2,124	3,378	715	900	1,615
Buchanan.....	23	0	23	630	.....	630	371	.....	371
Buckingham....	46	36	82	1,373	1,581	2,954	307	910	1,717
Campbell.....	74	26	100	2,317	1,394	3,711	1,120	735	1,905
Caroline.....	32	31	63	1,073	1,339	2,412	673	738	1,416
Carroll.....	79	3	82	3,301	74	3,375	1,320	43	1,363
Charles City...	8	3	11	254	433	687	135	223	358
Charlotte.....	32	26	58	1,341	1,721	3,062	740	1,033	1,833
Chesterfield....	43	24	67	1,513	1,330	2,743	1,037	640	1,637
Clarke.....	30	9	39	923	439	1,417	451	276	727
Craig.....	23	0	23	959	.....	959	644	.....	644
Culpeper.....	37	22	59	1,276	1,246	2,522	779	731	1,510
Cumberland....	21	18	39	539	1,155	1,743	335	553	938
Danville.....	11	10	21	463	746	1,209	262	343	604
Danville Distr'ct	39	23	62	1,905	1,332	3,237	1,015	953	1,973
Dickenson.....	25	.....	25	1,030	.....	1,030	547	.....	547

TABLE No. 2—CONTINUED.

	SCHOOLS.			ENROLMENT.			AVERAGE DAILY ATTENDANCE		
	White.	Colored.	TOTAL.	White.	Colored.	TOTAL.	White.	Colored.	TOTAL.
	1	2	3	4	5	6	7	8	9
Dinwiddie	38	27	65	1,014	1,632	2,646	545	671	1,216
Elizabeth City..	14	15	29	563	1,169	1,732	343	798	1,141
Essex	19	31	40	583	1,320	1,903	340	615	955
Fairfax	50	21	71	2,070	1,030	3,100	1,137	542	1,679
Fauquier	62	31	93	2,400	1,450	3,850	1,305	814	2,119
Floyd	75	7	82	3,540	301	3,841	1,964	203	2,167
Fluvanna	31	19	50	1,099	943	2,042	631	503	1,134
Franklin	89	30	119	3,324	1,477	5,301	1,933	891	2,824
Frederick	73	7	80	2,933	144	3,077	1,301	100	1,401
Fredericksburg..	8	3	11	431	263	694	343	137	480
Winchester	7	3	10	337	240	577	295	93	388
Giles	49	8	57	2,020	249	2,269	812	97	909
Gloucester	20	23	43	868	1,431	2,299	457	317	1,374
Goodland	24	24	48	312	1,153	1,965	439	592	1,031
Grayson	73	5	78	3,653	135	3,788	1,395	105	2,000
Greene	22	6	28	320	223	1,054	472	151	623
Greensville	22	23	45	505	954	1,459	350	632	982
Halifax	76	43	119	2,397	2,393	5,790	1,533	1,536	3,074
Hanover	35	30	65	1,430	1,531	3,001	705	795	1,500
Henrico	37	27	64	1,412	1,555	2,967	390	929	1,319
Henry	45	29	74	1,600	1,292	2,892	732	649	1,431
Highland	41	1	42	1,379	30	1,409	906	16	922
Isle of Wight...	20	15	35	1,070	550	1,620	724	345	1,069
James City... ..	9	3	12	220	455	745	157	223	330
King and Queen	19	16	35	700	346	1,546	453	413	871
King George....	17	11	28	553	616	1,174	273	325	598
King William...	17	16	33	623	963	1,591	371	517	888
Lancaster	10	9	19	371	371	742	212	274	486
Lee	39	5	44	5,300	300	5,600	4,060	210	4,270
Loudoun	75	27	102	3,175	1,662	4,837	1,335	735	2,070
Louisa	42	43	85	1,365	2,176	3,541	737	1,069	1,806
Lunenburg	27	21	48	336	1,050	1,386	463	572	1,040
Lynchburg	25	16	41	1,333	1,074	2,407	394	701	1,595
Madison	40	13	53	1,299	390	2,189	792	631	1,423

TABLE No. 2—CONTINUED.

	SCHOOLS.			ENROLMENT.			AVERAGE DAILY ATTENDANCE.		
	White.	Colored.	TOTAL.	White.	Colored.	TOTAL.	White.	Colored.	TOTAL.
	1	2	3	4	5	6	7	8	9
Manchester.....	7	4	11	466	318	784	322	201	523
Matthews.....	19	9	28	700	800	1,000	427	173	600
Mecklenburg...	40	37	77	1,580	2,328	3,908	900	1,158	2,058
Middlesex.....	13	10	23	468	794	1,192	246	288	534
Montgomery....	81	17	98	2,596	641	3,087	1,506	340	1,846
Nasemond....	34	22	56	1,900	1,230	2,430	620	658	1,278
Nelson.....	53	28	81	1,710	1,232	2,962	1,061	796	1,837
New Kent.....	11	9	20	279	424	703	171	260	421
Norfolk City....	18	10	28	1,383	615	1,998	739	477	1,216
Norfolk County.	30	30	60	1,320	2,339	3,659	632	924	1,526
Northampton...	16	10	26	651	742	1,393	329	352	691
Northumberland	21	9	30	920	600	1,522	504	279	783
Nottoway.....	18	17	35	622	883	1,505	392	554	946
Orange.....	33	21	54	1,130	1,154	2,284	720	714	1,434
Page.....	59	7	66	2,529	399	2,928	1,510	187	1,697
Patrick.....	55	11	66	2,317	464	2,281	1,260	243	1,512
Petersburg.....	20	21	41	1,133	1,585	2,718	801	1,178	1,979
Pittsylvania.....	65	32	97	2,943	2,011	4,954	1,341	919	2,260
Portsmouth.....	10	4	14	628	488	1,116	450	348	798
Powhatan.....	16	14	30	494	806	1,300	307	407	714
Prince Edward..	29	26	55	867	1,493	2,360	551	810	1,361
Prince George..	19	17	36	539	1,017	1,606	388	506	844
Prince William.	35	11	46	1,419	545	1,964	731	274	1,005
Princess Anne..	22	11	33	1,049	720	1,769	537	328	930
Pulaski.....	28	10	38	1,272	428	1,700	749	269	1,018
Rappahannock..	29	18	42	1,192	660	1,852	504	261	765
Richmond City..	101	58	159	4,969	3,194	8,163	4,014	2,746	6,760
Richmond Co....	22	8	30	795	451	1,246	390	229	619
Roanoke.....	54	20	74	2,534	979	3,513	1,165	621	1,786
Rockbridge.....	91	23	114	3,540	1,125	4,665	2,009	732	2,741
Rockingham....	183	19	202	7,145	1,108	8,250	4,598	424	5,017
Russell.....	73	9	82	3,264	277	3,541	1,303	202	2,005
Scott.....	87	3	90	4,753	77	4,830	2,689	54	2,643
Shenandoah.....	102	4	106	4,377	154	4,731	2,591	95	2,63

TABLE 2—CONTINUED.

	SCHOOLS.			ENROLMENT.			AVERAGE DAILY ATTENDANCE		
	White.	Colored.	TOTAL	White.	Colored.	TOTAL	White.	Colored.	TOTAL
	1	2	3	4	5	6	7	8	9
Smyth.....	60	8	68	2,678	874	3,052	1,905	230	2,035
Southampton...	40	22	72	1,210	2,185	3,395	556	701	1,257
Spotsylvania....	25	16	41	871	986	1,757	475	417	892
Stafford.....	24	8	32	976	300	1,545	490	173	661
Staunton.....	11	9	20	807	471	978	379	375	754
Surry.....	12	18	25	395	828	1,223	230	399	629
Sussex.....	24	28	52	642	1,460	2,102	363	684	1,047
Tazewell.....	62	16	78	2,942	542	2,784	1,214	302	1,516
Warren.....	28	7	35	1,319	271	1,590	688	161	849
Warwick	5	6	11	170	342	512	111	209	320
Washington.....	102	17	119	5,147	787	5,934	2,701	453	3,154
Westmoreland..	18	12	30	691	910	1,601	388	271	659
Wise	24	.....	24	1,571	.....	1,571	1,250	.....	1,250
Wythe.....	61	12	73	2,533	502	3,035	1,428	274	1,702
York.....	18	10	28	580	690	1,270	290	402	692
Totals.....	4,477	1,878	6,355	184,720	103,310	288,030	106,907	56,462	163,369

In addition to the instruction in the higher branches, which is given in many of the public free schools of the counties, the public high schools of the principal cities, such as Richmond—where public free school facilities rank first in the State, and which will compare favorably with those of any other city of equal extent in the United States—Petersburg, Norfolk, Alexandria, Lynchburg, Staunton, and most of the towns, such as Fredericksburg, Harrisonburg, Abingdon, and so on, furnish ample facilities for acquiring a first-class education.

Besides these means of obtaining a free education, all of the young men in the State over 18 years of age under restrictions in regard to proficiency are allowed to enter the academic department of the University of Virginia free of tuition, thus affording a rare opportunity to secure the highest education. The university is situated at Charlottesville, Albemarle county, and was established in 1825.

The Virginia Military Institute is situated at Lexington, Va., in the county of Rockbridge, and was established in 1839.

The Virginia Agricultural and Mechanical college is situated at Blacksburg, in Montgomery county, Va., and was opened in 1872.

These institutions are supported in part by the State, and are free for a selected number of male students of proper age and acquirements.

The Virginia Normal School, at Farmville, was opened in 1884, and is exclusively for the education of teachers. It is supported by the State, and is open only to young ladies under certain restrictions as to qualification and location.

The Hampton Normal and Agricultural Institute, established at Hampton in 1868, is for colored youths of both sexes, and receives some assistance from the State.

The Virginia Normal and Collegiate Institute is situated in the county of Chesterfield, opposite the city of Petersburg. It was incorporated in 1882, and the normal department opened in October, 1883. It is exclusively for the education of the negroes of Virginia of both sexes, and is managed by a board of trustees, all of whom are negroes but two, and the act of its incorporation requires that the president and all the instructors and attaches shall be of that race.

In addition to these institutions provision is made by the state for the education of the mute and blind in an institution at Staunton.

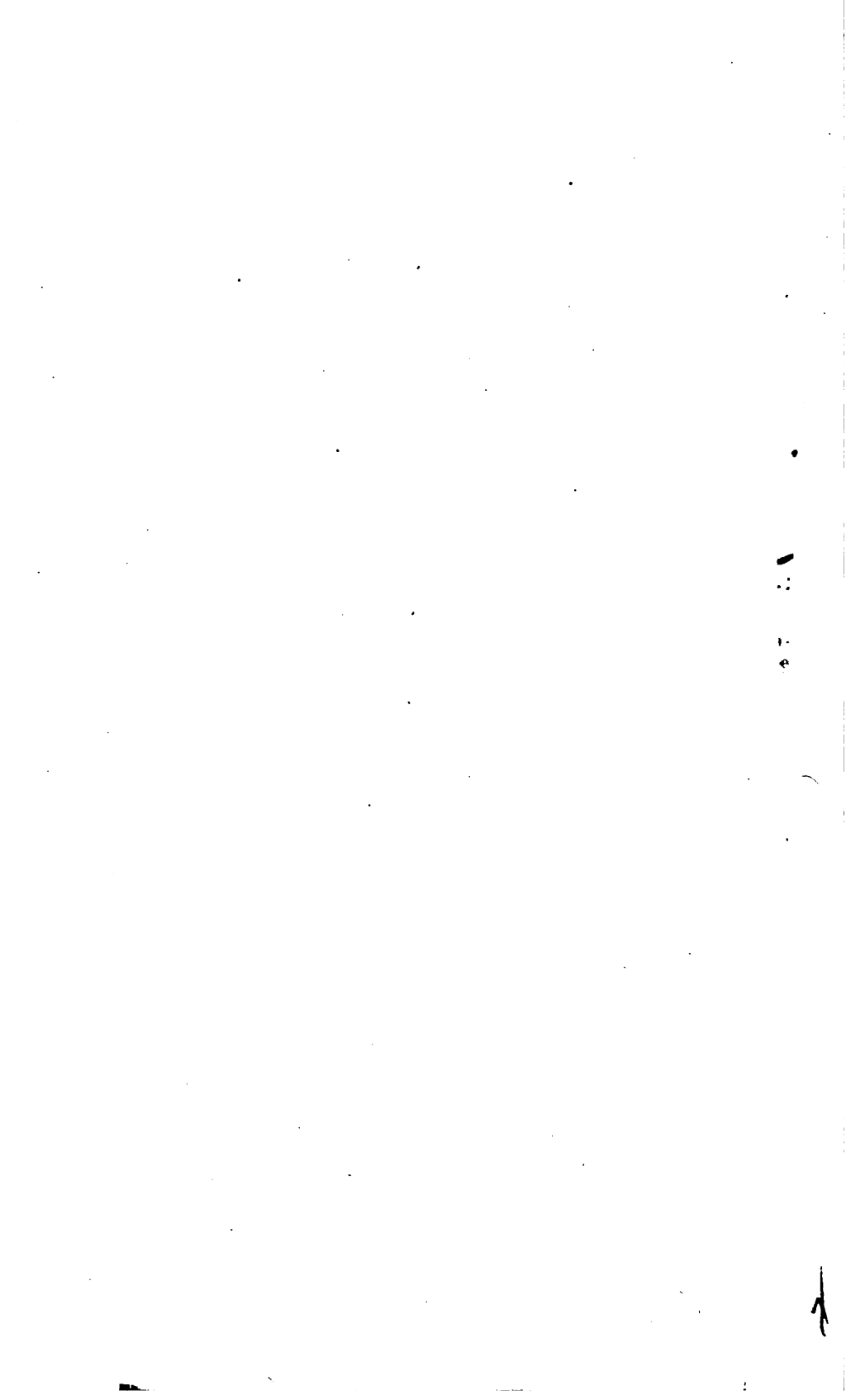
From this brief summary it will be seen that Virginia is alive to the great importance of education, and has afforded her children ample opportunities to obtain not only a well grounded primary education, through the means of a thorough public free-school system, but unusual facilities for the higher education *free* in the institutions enumerated.

A careful examination of tables 1 and 2 will show that the people are alive to their interest, and that never in the history of the State were they so thoroughly awakened to the importance of education as at the present time.

Very respectfully,

R. R. FARR,
Superintendent Public Instruction.





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